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EDITORIAL.

THE ALCOHOL SCANDAL.

The wide differences of opinion among physicians as to the ultimate effects of small or large daily doses of alcohol have caused laymen, and some physicians also, to assert that we really know nothing about it. To a limited extent this conclusion is true, yet it is very false in general, for if there is anything which is self-evident, even to the most ignorant layman, it is the disastrous result of excessive indulgence. As a class and as individuals, physicians are body and soul in favor of all practical measures for preventing drunkenness, yet their differences of opinions as to the details of the effects of alcohol seem destined to hamper if not nullify their efforts towards improving the health and morals of mankind in this vital matter. It is therefore high time that we get together and discover wherein our opinions are not based on facts.

There can be no possible differences of opinion as to the necessity for total abstinence on the part of locomotive engineers, motormen, chauffeurs and all others, who, in a moment of mental befuddlement of "moderate drinking," may cause accidents fatal to a large number of people whose lives are in the keeping of these quasi-public servants. Business men are also learning that occasional lapses of clerks, salesmen and workmen, decrease efficiency so greatly, that more money is made from total abstainers. In dozens if not hundreds of employments promotion or even retention in service is being restricted to the abstaining class. There is even a demand that no judge should be a drinking man, for it is openly asserted that in the notorious Ruef and Schmitz scandals in San Francisco, the criminals blocked the course of justice by taking advantage of the intoxication of a judge and obtaining his signature to papers he would not have signed if sober. In Virginia a similar scandal has resulted from the drinking habit of a State judge.

The number of abstainers is thus increasing from year to year and one would suppose that in time the necessities of civilization would

bring about universal abstinence, yet we are confronted by the astounding fact that the per capita consumption of alcohol is steadily increasing while drunkenness is decreasing, and this in spite of the spread of prohibition which makes it increasingly difficult to procure drink. It seems that alcohol, in spite of the frightful results of its abuse, is really a necessity for it has been a beverage for thousands of years,—ever since the ancient Teutons made their "mead" from fermented wild honey. In this country there was formerly an enormous consumption of home-made cider containing a high percentage of alcohol, and the modern statistics of per capita consumption of beers give a false impression. There is some ground for the statement that no more alcohol is used than formerly, only it is now made in breweries instead of our own cellars.

It has been repeatedly stated that both in plant and animal cells alcohol is one of the stages through which carbo-hydrates are oxydized to carbon dioxide, as a result of enzyme action, and that alcohol is always present in our tissues. The general trend of opinion, with a few marked dissenters, is to the effect that alcohol in small doses highly diluted is beneficial as a food. It saves one enzyme action in the same manner as a small amount of sugar saves the organism the labor of digesting that much starch, though both sugar and alcohol are harmful irritants in strong solution. The old claim that alcohol is never a food and always an irritant even in drop doses seems to be on the point of abandonment though the opinion is still held by a few men whose position entitles them to a hearing. Moreover there seems to be an increasing number of physicians who are asserting that life long observation convinces them that a very moderate indulgence has proved distinctly beneficial. Scandalous as it may seem, perhaps there is an instinctive desire for alcohol on the part of the tissues, for we cannot otherwise account for the manner in which abstainers use such large quantities of "soft drinks" containing from 2 to 12 per cent. of alcohol. Recent revelations in England show that many an "abstainer" was taking far more alcohol than those who openly went to the public houses for beer.

There is also an increasing number of articles describing experiments in which long continued administration of excessive doses of alcohol to lower animals has utterly failed to produce the sclerotic or other changes ordinarily ascribed to this poison. What is still more significant of the change in professional opinion is the amazing suggestion that as arterio-sclerosis is often found in those who have never indulged to excess and not so often in the heavy drinkers, the alcohol may have prevented the disease by lessening arterial tension. It is also being hinted that the drinking man, by increasing the flow of urine is "laundering

his blood" better than he who takes but little fluid, and is therefore much freer of those conditions believed to be due to defective elimination. It has been given as the reason why many a drinking man stands the tropics better than many a total abstainer though the popular impression is the very opposite.

In other words the puritanical total abstinence movement which gained such great momentum a half century ago, and which went to such extremes as to assert that a man could not be a true follower of Christ if he drank like Christ did, or made wine as He did, rather carried physicians off their feet. They went with the flood and blamed alcohol for all sorts of things of which it was innocent. Now that we are getting a foothold on solid facts, we are able to resist the flood more and more, and get a correct view of medical phenomena. It is to be hoped that hereafter no one will hold an opinion on this subject unless he has facts on which to base it. In no other way can we come to agreement and end the present scandal which is leading the public to the opinion that as we differ so widely among ourselves we do not know anything about the matter at all.

Above all else we should resist the temptation to consider alcohol the cause of every case of insanity in which there is a history of more or less indulgence. Very frequently the desire to drink to excess is a mere symptom of the nervous condition which ends in mental disturbance, and though we might be safe in asserting that alcohol had hastened the process, we should not exalt it to the dignity of first cause. Indeed alcoholic thirst is so often a sign of nervous disturbance that it is no wonder that some psychiatrists assert that over half or even two-thirds of all cases of insanity are due to drink.

The last error to be foisted upon the public is to detail the mental and nervous effect of relatively large doses, and then assert that it is the result of very moderate drinking. This is simply dishonest and is the reason why the well-known laboratory experiments are made to produce such a profound effect upon lay readers by "temperance" fanatics.

ILLUSIONS OF MEMORY.

The unreliability of witnesses has so long been known that it has built up a most elaborate system of "laws of evidence." Yet even with all the checks and counter-checks to avoid errors of observation and statement it is an axiom of jurisprudence that it is impossible to determine the exact facts from eye-witnesses. Until recently the whole

subject was left to the lawyers but the psychologists have for so long been subjecting the matter to experimental investigation that they seem to be on the point of entering the practical field of legal trials. Recently the public has evinced more than usual interest and it is a satisfaction that this laudable desire is being met by a series of popular articles by Hugo Münsterberg, the Professor of Psychology in Harvard University. (On the Witness Stand. The McClure Co.) Of course it is known by everyone, that if an occurrence is witnessed by say one hundred persons, not one of them is able to see everything that happened, and none can remember exactly what he did see, so that the sworn evidence must be pieced together and the completed legal picture is a mosaic. All this is so self-evident as to require no explanation, as it is a matter of every day experience that we do not notice things happening before our eyes, and that we very quickly forget much of what we do see. Existence would be intolerable—indeed impossible—if we did not possess the power to inhibit perceptions from making a permanent record. We must forget the vast majority of them.

The new viewpoint of experimental psychology is due to the discovery that every one, through the special brain organization peculiar to himself, is physically unable to perceive certain classes of phenomena or remember them even if he does perceive them as they occur. The marked cases have long been known—those unable to recall sounds or visions as well as those whose memory is accurate and complete for a certain class of phenomena. It is then to be expected that each one has his personal equation, which renders him either a good or worthless witness. It is a rather startling proposition that he can be subjected to tests which will reveal his limitations and abilities, so that a proper valuation can be given to his testimony, in arranging it in the mosaic. Yet this is the possibility, and moreover it does seem that in time it will become a necessity.

The interesting part of the new pyschology is the fact that our senses deceive us in very definite and measurable ways, and that testimony which is false can be detected. The opposing lawyer is apt to regard false evidence as deliberate in spite of the well known and well proved fact that the witnesses are convinced that what they state are the real facts even when the truth is far different. They are generally illusions of memory and not necessarily illusions of the preceptions—that is, other memories or even suggestions creep into the mental picture in which they become firmly cemented as part of it. The startling statement is that no one can prevent these adulterations unless he goes through a long course of training in the art of observing phenomena of a limited sphere. Even then none of us is a perfect observer and the expert diagnostician is fre-

quently deceived or fails to see phenomena and too when he is on the look out for them. The history of medicine shows that in almost every disease the most obvious symptoms have escaped the notice of millions of practitioners, until a specially gifted man points them out. How foolish then to expect an ordinary witness to note and remember what his eyes see and his ears hear, and how wise to determine by tests the amount he is liable to remember correctly and how much is illusion or intrusion. The frequency and extent of these illusions of memory are the startling revelations of the new psychology. Though it is sad enough to know that we can not trust our own senses too implicitly, it is amazing to know the extent of their deceptions in the case of those whom we might roughly class as the neurotic. Münsterburg's explanations take one into the enormous field of "suggestions"—a field by-the-way which is almost uncultivated by the profession, though its wild fruits are utilized in almost every case we treat. He wisely omits to describe hypnotism other than as a state of suggestibility, though he does not show that it can be wisely used for this purpose. The importance of the matter to the medical profession may be realized when it is learned that "confessions" of accused criminals may be a maze of illusions, resulting from suggestions in hypnotic states. It is a most disquieting thought that a weakling hanged in Chicago for a confessed brutal murder, may have been entirely innocent, and that when he stated six days before his execution that he knew nothing of the crime and had no recollection of his confession, he was telling the truth,—his illusions which had been forced on him by the police methods having faded by this time. The whole matter of testimony deserves as much study by the medical profession as our scandalous "expert" evidence.

THE CAUSE OF UNLIKENESS TO PARENTS.

The quarrel over the origin of variations will not down for it is the modern biological problem which has replaced the old battle over the origin of species. No scientist now doubts that every species is the result of the survival of the fittest variations in some prior species. Nature selects certain new forms as they appear and kills the rest. The law of natural selection seems to be definitely accepted as a proved fact, but the trouble always has been to account for the constant appearance of new forms—the variations—a matter with which the law of selection does not concern itself. The scientific world has always been at wits end to explain why the law of heredity did not always

compel offspring to resemble parents exactly instead of approximately. Some causes exist which apparently compel more or less difference from parents, so that complete resemblance is the rare exception, and unlikeness almost universal.

MacDougal's recent creation of new plant species is thought to be a great step in the explanation of variations. He is now director of the Department of Botanical Research of the Carnegie Institution but for many years has been noted for his remarkably original investigations in plant physiology. His latest work has been to treat the plant ovaries with certain solutions of chemicals and then fertilize them with pollen. He has thus produced new forms which breed true for several generations as though they were permanent changes, and he has announced the theory that many, if not all, variations in nature are thus formed by the action of chemical substances in the ground water or by its radioactivity or by the stings of insects and like causes,—that is, they are mere chemical modifications of the germ cells which would have developed into forms resembling the parent if they had been acted upon by the same environment as the parents during this development.

The medical importance of MacDougal's theory is so overwhelming that the profession must take up the work in earnest to explain pathological and other human variations. Professor E. Ray Lankester in an address to the British Association for the advancement of science directed attention to the fact that physicians can do and should do a great work in this direction because they critically study every specimen of the most important species of living organisms—man himself. They can thus do more than any other profession to explain what heredity really is, and they will also be able to detect the causes of abnormalities. It is noteworthy, that as a class, physicians are always on the search for causes so that they are in a receptive mood for such revolutionary discoveries as those announced by MacDougal. Indeed it is quite commonly asserted that the poisons of syphilis and other infections, alcohol and the metals actually modify the germ cells in the ovary and testicle and cause the new organism to develop abnormally into the wretched creatures who are parasites upon society. That is, we have been observing in the clinic, jail, asylum and poorhouse the identical process which MacDougal produces experimentally in plants. Science may yet prove how the sins of the parents are visited upon the children unto the third or fourth generation—a fact known for thousands of years.

The permanence of MacDougal's new species is still in doubt. Previous theories incline to the view that in time—that is, in many generations—the type returns to the parental form if the exceptional causes are removed, in the same manner that modified bacteria revert, in many genera-

tions, to the original type when the normal environment is restored. He, and many others, too, inclines to the view that the poisons have produced a new chemical—a new protoplasm—which cannot be restored. We hope they are wrong for it casts a cloud upon the bright prospects for the regeneration of the victims of slum life in cities. These poor tots have been poisoned so to speak, so that they are abnormal. The wish may be father to the thought, but the thought is very prevalent nevertheless, that if we could only place them in good surroundings their future offspring will be normal human beings if they themselves are not too badly damaged before we get at them with our aid.

A new movement to cure defective children has been started by the Pennsylvania Society to Protect Children from Cruelty and it is based upon the assumption that abnormalities are neither permanent nor hereditary but due to remediable causes. Their present plan is merely to remove some of the effects of bad living, which of themselves are causes of still further mischief. Physicians make careful examinations and remedy such defects as surgery or ophthalmology will reach. Sometimes—indeed often—it is merely a question of glasses to give vision, the lack of which has caused stupidity, viciousness or far worse. The results so far accomplished are said to be splendid, though the work has brought to light a large number which have been so badly injured before birth or even before conception, perhaps, as to be hopelessly imbecile or feeble-minded. Every thinking man wishes these workers God speed.

The causes of human abnormalities must be studied and this step is urgently needed now that a good beginning has been made in the investigation of the defectives themselves. The causative factors should be discoverable, for the abnormalities are probably due to MacDougal's process of poisoning of germ cells. Indeed this great society is in a position to carry out Lankester's suggestion and help clear up the question of variation and heredity. We may get proof perhaps that every variation from parental type is due to some cause in the environment and that a child will resemble its normal ancestors if it is properly raised. Degeneration has had its day, now let regeneration take its proper position in the center of the stage. The curing of defectives is grand work but prevention is grander. Let every public school child be included in this splendid system of examination—the beginnings have proved successful so let us have more. In every case let there be an earnest effort to find out why the child has developed badly. Biologists are all coming to the opinion that every variation from parental type is due to the environment and the rule must apply to our defectives.

LITERARY NOTES.

THE eighth number of the *Revue de Psychiatrie* publishes a résumé of the curious communications made to the Medico-Psychologic Society by M. Leroy, in regard to singular hallucinations—a form of visual sensations but little understood. These hallucinations have the invariable characteristic of being small, of representing beings and definite objects of slight dimensions, at the same time conserving their relative proportions. Hence the term "lilliputian hallucinations", which M. Leroy coins to describe these manifestations. It is in fact a lilliputian world that appears to the eyes of the astonished invalid. One interesting case reported is that of a general paralytic who, following a stroke, had intense hallucinatory delirium of all the senses. In the course of this delirium there appeared numerous lilliputian hallucinations: diminutive soldiers defiled in serrated rows; diminutive women toyed with their fans; and diminutive bicycle riders coursed around the room. This world of little people—this microcosm—continually underwent transformation. The disturbance lasted three months and terminated only with the death of the patient. Another case showed a passing hallucinatory delirium, with delirium of the sight and hearing, in which the patient distinctly saw little soldiers dancing around the night-lamp. These psycho-sensorial disturbances are a form of micropsia. Now micropsia has been observed especially in hysterics, epileptics, and in the unbalanced; therefore, it is not wrong to assert that lilliputian hallucinations may occur in all mental maladies, supervening in the form of conscious hallucinations. And they are present despite the fact that the invalid conserves normal vision for all the objects which surround him. M. Leroy cites six observations of this peculiar mental phase taken from the works of Taine, Leuret, and Brierre de Boismont. Taine's illustration concerns a doctor who, following an attack of cholera, saw little people dancing on a table; Leuret's, a priest who while conducting service saw the church filled with small Ethiopians. In accordance with these and other observations, M. Leroy defines the characteristics of lilliputian hallucinations thus: visual sensations of greatly reduced objects that are multiple and mobile and frequently colored, and invariably produce emotions which are agreeable. He compares them with the cinematographic hallucinations of Régis, and attributes their origin to a toxin on account of their characteristics and the circumstances which accompany them. The pathogenesis of these disturbances would support the opinion that micropsia is of toxic origin. M. Leroy recalls the works of Otto Veraguth of Zürich and those of Heilbronner, ranging himself with the latter by affirming that micropsia is a morbid trouble of the cortex. M. de Clérambault has observed lilliputian hallucinations, such as M. Leroy describes them, in alcoholic and chloral exointoxication, and where there are no intoxications, as in circular in-

sanity, in the persecuted-persecutors, and in tabes. Patients are not surprised but amused by these hallucinations, several being of the opinion that "these little persons are excellent company."

As yet, we in this country know little of rhythmic gymnastics as advocated by Jacques Dalcroze, who is the pioneer of the idea that all of us should develop a musical rhythm in walking and gesticulating. He recognizes that gesticulations are manifestations of individuality, expressions, so to speak, of our personality, and his desire is to educate each child until it has a mastery of its movements instead, as obtains to-day, being mastered by them. Every child enjoys the exercises which call into play bodily movements; therefore Dalcroze contends if these movements are made in a rhythmic fashion—that is, in consonance with a musical theme—two very important points are gained: the exercises are of an added interest to the child and the ear becomes so accustomed to correctness of sound that ever after both body and mind are greatly benefited. All of which is an excellent illustration of a modern phase of education that is closely related to psychology. In the April number of the *Archives de Psychologie* is an extensive notice of the two volumes in which Dalcroze ventilates his ideas. The writer's remarks run as follows: "The rhythmic gymnastic method created by Jacques Dalcroze, professor at the Geneva Conservatoire, is becoming widely known in all European countries. In short, it is æsthetic education which has for its object the development of the musical perception by giving music its integral value: making the rhythmic instinct a psychological reality. Rhythmic gymnastics gives muscular expression to the sensation produced by musical rhythm: that is, when rhythm invades the organism, it acquires a psychological value, in that it becomes the complement of æsthetic education. The consciousness of sonorousness united with a perception of rhythm are intimately associated in all plastic art. We know, moreover, that the sense of rhythm in man is the result of the constitutional necessities of the organism. In other words, rhythm born of coördinated and conscious energy is instrumental in spontaneously eliminating by means of coördination the forces which are obstacles to its achievement. Now conventional education, which has until the present time looked upon corporal manifestations as of an inferior order, has always opposed the rhythmic instinct. On the other hand, rhythmic gymnastics has but one object: by preventing a dissociation of the different elements which go to make up a complete æsthetic manifestation and by tending to re-establish an equilibrium between the intellectual and bodily faculties, artistic expression is shown in a physical manner. And since this equilibrium causes a more complete development of the being, it is not difficult to understand how these exercises can affect most favorably the

bodily health as well as the formation of character. In this respect rhythmic gymnastics is an educator of sovereign worth."

A work which has just been presented to the French Academy of Medicine will be of interest to all those medical men who devote part of their time to the study of medicine in the past. "La fin de la Faculté de médecine de Reims, ses derniers Docteurs— Régents," by Dr. Octave Guelliot, contains interesting chapters on the Faculty of Rheims and its Regents up to the time of the decrees of the National Assembly and the Convention, when throughout the Republic all faculties and diplomas were suppressed. The first part of the work is devoted to a detailed account of the professors, students, instruction and examinations during the last years of the eighteenth century. The Faculty had been some two hundred and fifty years in existence; in fact, ever since the University was founded at the instance of Cardinal de Lorraine through a bull issued by Pope Paul III. on January 5, 1547, and approved by Henry II. The second part relates the events preceding the application of the law of September, 1793, which adjudicated, among the national property to be sold, the sale of a "house situated at Rheims, called a medical school, belonging hitherto to the Corporation of doctors of the township of Rheims; price 3,000 livres." The third part is probably the most engaging, for here are told many anecdotes of the Regents; how, for instance, while awaiting the reorganization of the medical school during those long and tedious years from 1793 to 1808 when they were prohibited from practicing, they, nevertheless, went among their fellow-citizens and by reason of their scientific training and their devotion to their former vocation gave advice and support to all questions affecting hygiene and how best to aid the sick. The reader cannot but admire such fortitude in the face of what must have been a sickening discouragement, for all this was done with no hope of a betterment in medical educational matters. No chapter in the whole French revolutionary period makes sadder reading than when the National Assembly made so light of the science of medicine that it allowed its demagogy to blind its intelligence to the needs of a people that was striving for freedom.

ORIGINAL ARTICLES.

AN INVESTIGATION AS TO THE PREVALENCE OF VISUAL AND AURAL DEFECTS AMONG THE PUBLIC SCHOOL CHILDREN OF ST. LOUIS COUNTY, MO.

By Albert E. Taussig, M. D., of St. Louis.

The following investigation, the funds for which were generously supplied by Mr. B. Greensfelder, of Clayton, Mo., was undertaken under the auspices of the St. Louis School of Philanthropy, at the suggestion of its Director, Prof. Thomas J. Riley. The measurements were made by Drs. J. G. Calhoun and C. A. Vosburg, of St. Louis, under the general direction of the writer.

The prevalence of physical defects among city children has been thoroughly investigated at many places both in this country and abroad and there can no longer be any difference of opinion as to the necessity for thorough medical inspection in city schools.

Much less is known as to the prevalence of such defects among the school children in suburban and rural communities, and yet such information is indispensable to enable the State authorities to form a just opinion as to the advisability of inaugurating a state-wide medical inspection of all school children.

It seemed worth while to undertake such a study of the school children of St. Louis County for the purpose of adding to our knowledge in this matter. The present investigation was limited to the prevalence of impaired vision, defective hearing and well-marked adenoids. Some two thousand children were examined in the public schools of Wellston, Clayton, Webster and Tuxedo, suburban communities in the neighborhood of St. Louis.

The eyes were tested by means of Snellen's charts hung in a good light at a distance of twenty feet, each eye being tested separately. Such an examination, however, fails to reveal the presence of hyperopia, a frequent cause of eye-strain in younger children, and our figures for impaired vision among the youngest children are therefore probably somewhat too low. It seemed best to omit the tests for hyperopia, not only on account of the added labor involved, but also to facilitate a comparison of our results with those obtained elsewhere by examinations limited to the use of Snellen's charts.

The hearing was tested by means of a standard whisper, audible to normal ears at a distance of fifteen to twenty feet, each ear again being tested separately. Adenoids were recorded present only where they clearly interfered with nasal respiration and thus represented an actual handicap to the child. Records were kept on cards arranged as follows:

AGE AT NEAREST BIRTHDAY NAME..... G. Q.

RIGHT EYE, V. = 20/	RIGHT EAR, WHISPER HEARD FT.
LEFT EYE, V. = 20/	LEFT EAR, WHISPER HEARD FT.
SPECTACLES? YES. NO.	ADENOIDS? YES. NO.

DATE SCHOOL

EXAMINER

THE TOTAL PERCENTAGE OF VISUAL AND AURAL DEFECTS.

Of the two thousand children examined some 30.6 per cent. had vision that was below normal in one or both eyes. In about half of these children, however, this defect was not sufficiently grave to signify a real handicap. A little over 14 per cent. had vision that was less than two-thirds of the normal in both eyes. This is a serious defect and such eyes urgently demand proper glasses. The extreme cases of visual impairment were rather rare, the children with vision with less than half the normal in both eyes being a little less than 3 per cent. of the total number examined. These findings about correspond to the observations made elsewhere, as illustrated by the following table:

VISUAL DEFECTS IN PUBLIC SCHOOLS.

	Per Cent.
Heidelberg, Germany (1876)	35
Edinburgh, Scotland (1904)	43.2
Dunfermline, Scotland (1907)	17
Cleveland, well-to-do district (1907)	32.4
Cleveland, congested district (1907)	71.7
Massachusetts, except Boston and environment (1907)	19.9
Boston and environment (1907)	30.7

	Per Cent.
Boston (1908)	23
New York City (1906)	31.3
New York City, Borough of Manhattan (1908)	10.2
Chicago (1909)	19.4
Jefferson City, Mo., either eye (1908)	36.5
Jefferson City, Mo., both eyes (1908)	22.7
St. Louis County, Mo., either eye less than 20-20 (1909)	30.6
St. Louis County, Mo., both eyes less than 20-30 (1909)	14.3
St. Louis County, Mo., both eyes less than 20-40 (1909)	2.8

All of these figures are probably a little too small, since they do not include cases of hyperopia or of moderate degrees of astigmatism. Their most striking feature is their lack of uniformity. For this several factors are probably responsible. In the first place, there is no agreement as to what constitutes defective vision. In some cities everything less than perfect vision is reported as defective. Elewhere vision by both eyes must be less than perfect or must even be less than 20-30. The last would seem a rational criterion since it alone involves a real handicap. It would seem, too, that in congested districts visual defects are more prevalent than elsewhere, as is shown by a comparison of the figures for Edinburgh and Dunfermline, between the two portions of Cleveland and between Boston and the rest of Massachusetts. Finally the drop in the percentage of visual defects in Boston between 1907 and 1908 and in New York City between 1906 and 1908 may, at least in part, be due to the beneficial effects of systematic school inspection.

A similar divergence in seen in the figures for defective hearing. Among our children over 7 per cent. were found defective in either ear, whereas the number able to hear the standard whisper with neither ear at a distance of over ten feet was only a little over 2 per cent. This corresponds fairly with results obtained elsewhere:

Defective Hearing in Public Schools.

	Per Cent.
Edinburgh, Scotland (1904)	12.2
Dunfermline, Scotland (1907)	4
Cleveland, well-to-do district (1907)	5.2
Cleveland, congested district (1907)	1.8
Massachusetts, except Boston and environment (1907)	5.8
Boston and environment (1907)	7.7
Boston (1908)	7.6
New York City (1906)	2
New York City, Borough of Manhattan (1908)	1
Chicago (1909)	2.7
Jefferson City, Mo., either ear defective (1908)	7.7
Jefferson City, Mo., both ears defective (1908)	1.3
St. Louis County, Mo., either ear defective (1909)	7.3
St. Louis County, Mo., both ears seriously defective (1909)	2.2

Here, too, our figures suggest that the variation in the results obtained elsewhere may, at least in part, be due to the fact that in some places any departure from the normal is recorded whereas in others only a serious defect is counted.

Adenoids sufficiently well marked seriously to interfere with nasal respiration were found in less than 1 per cent. of our children. This is distinctly less than the findings elsewhere.

Prevalence of Adenoids Among Public School Children.

New York City (1908)	16.4 per cent.*
Boston (1908)	4.7 per cent.
Chicago (1909)	3.7 per cent.
St. Louis County	0.9 per cent.

The low percentage of adenoids among our children is probably partly due to the fact that we included only well-marked cases. It is also doubtless influenced by the probability that in an intelligent suburban population an unusually large proportion of the children suffering from adenoids receive proper surgical attention. It is of interest to note that, without exception, every one of our cases of adenoids had markedly defective hearing.

2. Influence of Sex Upon Defective Vision and Hearing.

On the whole it would seem that defective vision was a little more prevalent among girls than among boys, whereas the reverse is true for defective hearing. Gulick and Ayres have made the same observation in New York in regard to visual defects.

Influence of Sex Upon Visual and Auditory Defects.

	Boys.	Girls.
New York City (1908) defective vision	15.7%	20.8%
St. Louis County (1909) defective vision	29.1%	31.1%
St. Louis County (1909) seriously defective vision	13.5%	15.1%
St. Louis County (1909) defective hearing	8.7%	6.0%

These differences as found in St. Louis County are probably too small to have any definite significance.

3. The Influence of Age Upon the Frequency of Physical Defects.

In their careful study of New York City school children published last year, Gulick and Ayres made the very interesting observation that the frequency of defects tends steadily to decrease as the children grow older. This furnishes them an explanation for their finding that in each grade the over-age children on the average have fewer physical defects than those of normal age. In our schools the same observation was made, as is shown by the following table. Our figures are uniformly lower than those of Gulick and Ayres since their records included a large variety of defects, while ours were limited to vision, hearing and adenoids.

INFLUENCE OF AGE UPON PREVALENCE OF DEFECTS.

Age.	Per Cent. of Children with Defects. Gulick & Ayres.	St. Louis Co.
6	82.9	40.4
7	86.5	47.8
8	85.8	51.8
9	81.8	41.6
10	77.8	38.1
11	73.8	35.4
12	69.9	35.4
13	68.0	34.3
14	68.1	27.4
15	63.1	27.3
15 and over	——	23.9

A closer study of the data, however, discloses a very curious divergence on the part of our observations from those previously made. Gulick and Ayres, while they found a steady decrease in the prevalence of physical defects as the children grew older, noted that the frequency of impaired vision seemed, on the other hand, to increase with age. Observations made in Germany show this fact even more strikingly, the percentage of short-sighted children increasing steadily from a few per cent. in the lowest grades to nearly 100 per cent. in the highest. In our schools, on the other hand, a contrary tendency showed itself. With the exception of the first two years, the frequency of short-sightedness seemed steadily to diminish with increasing age. This is most striking if we tabulate only the unrecognized visual defects, *i. e.*, if we count as normal those whose defective vision is perfectly corrected by glasses. The phenomenon appears, however, hardly less clearly if we count as defective even those wearing correct glasses. The following table contrasts the observations of Gulick and Ayres with ours:

INFLUENCE OF AGE UPON PREVALENCE OF VISUAL DEFECTS.

Age	Per cent. of Children with defective vision Gulick & Ayres	St. Louis Co. Uncorrected	St. Louis Co. Total	Per cent wearing glasses St. Louis Co.
6		29.4	29.4	0
7		41.0	41.0	0
8	17.5	42.5	44.1	2.1
9	20.2	32.5	32.9	0.4
10	25.0	32.2	34.1	3.4
11	23.9	28.3	32.7	6.6
12	26.5	28.8	32.3	5.2
13	23.7	27.2	28.7	2.5
14	27.7	21.7	22.3	1.7
15	25.6	20.9	22.7	2.7
15 and over		17.7	22.1	8.0

About 3 per cent. of all the children wore glasses, of which two-thirds were approximately correct, while one-third were definitely incorrect.

The explanation of the divergence of our results from those obtained by others is not readily apparent. Why should the eyes of our children improve with age when those of city children tend to deteriorate? It is not due to any greater care on the part of parents, for the percentage of unrecognized and uncorrected visual defects is as great in St. Louis County as elsewhere and the percentage of visual defects corrected by glasses does not increase with the age of the children. Perhaps the smaller classes of suburban schools enable the teachers to give their pupils more individual attention and so to prevent undue eye-strain. Or it may be that the favorable hygienic surroundings of suburban children make it possible for visual defects spontaneously to correct themselves. The graver visual defects tend to become fewer with advancing age, quite as definitely as the slighter ones, as shown by the following table. The greater irregularity of the fluctuations in the subdivisions of the visual defects is probably due to the fact that we are dealing with smaller figures.

Influence of Age Upon Slight and Grave Visual Defects.

Percentage of children with visual defects.

Age	All visual defects	Slight visual defects	Serious visual defects (vision of both eyes less than 20/30)	Grave visual defects (vision of both eyes less than 50%
6	29.4	16.7	12.7	0.9
7	41.0	20.8	20.2	2.8
8	42.5	16.6	25.9	2.6
9	32.5	18.2	14.3	1.7
10	32.2	19.0	13.2	3.9
11	28.3	19.0	9.3	2.2
12	28.8	14.0	14.8	4.4
13	27.2	14.6	12.5	4.0
14	21.7	11.7	10.0	2.3
15	20.9	10.0	10.9	1.8
15 and over	17.7	7.1	10.6	2.7

The gravest lesions alone show an irregular increase up to 12 years, but thereafter diminish. Such an increase is to be expected, since it is well known that short-sightedness tends to grow worse under the influence of school work. The surprising feature of these observations is that this increase is not seen in any but the gravest defects and even here not after the age of twelve.

Defects of hearing are not definitely influenced by age, as may be seen by the following table. I have not been able to find other observations for comparison.

INFLUENCE OF AGE UPON DEFECTIVE HEARING.

Age.	Percentage of children with defective hearing.
6	11.0
7	6.8
8	9.3
9	9.1
10	5.9
11	7.1
12	6.6
13	7.1
14	5.7
15	6.4
15 and over	6.2

The extreme cases of adenoids were too few in number to render a classification by ages trustworthy. So far as our figures went, however, they indicated an increase in frequency up to 2.5 per cent. at the age of 10 years and thereafter a diminution. Gulick and Ayres, with their larger material, found a steady decrease in frequency from 6 to 15 years.

4. HAVE PHYSICAL DEFECTS AN IMPORTANT BEARING ON SCHOOL PROGRESS?

This problem has apparently never been properly approached. Gulick and Ayres divided the children in each grade into those of normal age and those over age. The latter are those who for one reason or another have been retarded in their school progress. They found, nearly constantly, a greater frequency of physical defects in each grade among the children of normal age than in those above the normal age. At first sight this might seem to show that physical defects are conducive to school progress. As they point out, however, it is clear that since the frequency of physical defects tends to decrease as the children grow older, children in each grade who are above the normal age will have fewer defects than those of normal age, just because they are older. This method can, therefore, not lead to any solution of the problem. It is better to approach the question from the other side. If for each age we determine the average grade of all the children of that age, such an average grade can be calculated for normal and for defective children. If at each age the normal children will, on the average, be found to have attained a more advanced grade than the physically defective ones, we may fairly conclude that these defects have proven a handicap to school progress and the difference between the average grades will be an approximate measure of this handicap. The word "grade" is here used in

the technical school sense, signifying a stage of scholastic progress. In our schools the children begin with the first grade, advancing annually, on the average, one grade up to the eighth. For purposes of comparison I have called the high-school the ninth grade. When we tabulate our data according to this method we obtain the following table. It will be seen that, on the whole, the children with visual or aural defects make slower progress at school than their normal mates. The difference is not, however, nearly as great nor as constant as we might *a priori* expect, indeed about half the time this difference is practically negligible. Moreover, the children with grave visual defects have apparently not at all lagged behind those with slighter visual impairment.

AVERAGE GRADES OF NORMAL AND PHYSICALLY DEFECTIVE CHILDREN.

Age	Normal Children	Children with visual defects	Children with serious visual defects (both eyes less than 20/30)	Children with impaired hearing
6	1.1	1.1	1.1	1.1
7	1.3	1.6	1.7	1.7
8	2.2	2.1	2.1	2.0
9	3.0	2.8	2.6	3.0
10	3.7	3.3	3.2	3.8
11	4.0	4.0	3.7	4.0
12	5.0	4.9	5.2	4.5
13	6.2	5.9	5.7	5.9
14	7.0	7.0	7.4	6.3
15	7.8	7.6	7.7	6.9
15 and over	8.7	8.4	7.8	8.3

The question naturally arises: "Why do not these physical defects cause a greater and more constant retardation in the children's school progress?" This question does not, in the present state of our knowledge, admit of a definite answer. It was suggested by a number of teachers, to whom the point was submitted, that possibly the explanation might lie in the prevalence of the so-called "lock-step." It seems that in many schools at the end of each preordained period, practically all the children are promoted to the next higher grade, irrespective of whether they have done their work well or ill. The dullards are pushed along with their brighter fellow students and the latter are held back to allow the former to keep pace with them. An exception is made only occasionally, when the pupil is extremely quick or extremely derelict. Under these circumstances the school work of the children with defective vision or hearing might be seriously hampered without their school progress, as shown by a table like the above being definitely retarded.

Conclusions.

The following conclusions may fairly be drawn from our data:

1. Unrecognized or at least untreated defects of vision and hearing are nearly as common in our suburban communities as in large cities. Both call urgently for systematic medical inspection.

2. Unrecognized adenoids, so extreme as to cause serious interference with normal respiration, were not found to be very common. In nearly one per cent. of the children, however, the adenoids imperatively demanded operation. The condition was apparently not realized by the parents and here too adequate medical inspection might be of great service to the children so affected. It is probable that the marked deafness, present in every one of the children with adenoids, would disappear promptly after operation.

3. Defective vision seems a little commoner among girls and defective hearing among boys. The difference is not, however, very great.

4. In other communities a progressive increase in the prevalence of impaired vision was noted as the children grew older, whereas in St. Louis County the reverse was found to be true, both as regards slight and grave defects. The explanation of this fact is not readily apparent. It does not, however, furnish an argument against inspection, since at the best these defects are common enough. The fact that one-third of the children with spectacles wore unsuitable glasses is also suggestive in this respect.

5. Our data show that to a certain, though not very great extent, the children with impaired vision or hearing progress more slowly in their school work than their normal fellow students. The evil effects of unrecognized physical defects go, however, far deeper than this. Owing to the fact that, to a great extent, children are promoted from one grade to the next, irrespective of the quality of their school work, the brighter children are necessarily held back to a pace that can be followed by the dullards. It is clear that the latter class will in part consist of children mentally normal, but handicapped by impaired hearing or vision or by other remediable defects. Adequate medical school inspection would lead to the recognition and, to a great extent, to the correction of such defects. Such children would then not only themselves be able to do better work, but by ceasing to act as a drag upon the normal children would enable the later to progress more rapidly. The efficiency of school inspection, in this respect, is shown by the fact that in cities in which this measure has been in operation for some years, a considerable diminution in the prevalence of physical defects has been noted.

6. The marked divergence between the data obtained in different cities or, in the same city, by different investigators indicates the need for greater uniformity in methods of tabulating these statistics. Thus children with slightly impaired vision in one eye would by some examiners be

classed as normal, by others as defective. For statistical purposes it is important for the investigator to state just where he draws the line between defective and normal. As regards vision, hearing and adenoids, a division into slight and serious defects is to be recommended.

7. In estimating the value of medical inspection of school children, it must be remembered that the above consideration form but a portion, and that a small portion, of the argument in its favor. The greatest benefit to be derived from inspection consists in the early recognition of contagious diseases and the prevention of school epidemics. It is far more efficient, in every way, promptly to recognize and isolate the first case of contagious disease than to close the school when the harm has been done. This aspect of the question, however, no longer admits of argument, whereas the value of a general physical inspection in suburban and rural communities still seemed worthy of demonstration.

Appendix.

It is clear that in future investigations, the bearing of physical defects upon school progress can best be estimated by calculating the average grade for each age in normal and in defective children. The problem, arithmetically, is an interesting variation of the method of determining the point of equilibrium of a straight lever. The number of children in each grade is multiplied by the number of the grade. The sum of these products divided by the total number of children gives the average grade.

Example: Normal children, aged 8 years, are divided among the first four grades as follows: the total number of normal children of this age being 94:

Grade.		Number of children.		Product.
1	X	17	=	17
2	X	50	=	100
3	X	26	=	78
4	X	1	=	4
		94		199

$\frac{199}{94} = 2.16$, the average grade of normal children aged 8 years.

If we regard as a unit of work done, the passing through one grade of one child, then towards the end of the school year, the 17 children in grade 1 will have done 17 units of work. The 50 children in grade 2 will, during their school life, have done 100 units of work, the 26 in grade 3 will have done 78 units, etc. Thus the 94 normal children aged 8 will have done 199 units of work, and the average child will have done 2.16 units. The last will, therefore, represent the grade of the average or

type child of this group. It is clear that unless artificially held back, the more fit a group of children is, the greater the number of units of work it will accomplish and the higher its average grade will be. Thus, in the absence of the so-called "lock-step," the difference between the average grade, at each age, of normal children and those with any special defect will be a measure of the influence exerted by this defect upon school work. Or, on the other hand, assuming that such defect does seriously influence school work, the absence of such a difference indicates the prevalence of the "lock-step."

A NOTE ON THE VALUE OF THE EXAMINATION OF FRESH BLOOD.

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The development of many of the newer diagnostic methods has progressed so rapidly as to be almost bewildering, and a well equipped hospital laboratory now requires trained specialists to perform certain tests, as for instance, the Wassermann complement fixation for syphilis. On the other hand, this state of affairs does not belittle the value of thorough clinical examination, history taking, and simple methods which every practicing physician possessing a microscope can perform in his own office without any special apparatus or any great technical training. Consequently any diagnostic aid which can be simply performed should be emphasized.

At the present time one can scarcely practice medicine anywhere without the help of a microscope; such simple procedures as counting leucocytes, studying sputa for tubercle bacilli, are as necessary for successful diagnosis and treatment as is keenness of observation or the clinical thermometer. The value of this need not be emphasized; yet reference may be made to the studies of Stiles on Uncinariasis in the Southern States, the results of which have been so far reaching that a former incurable scourge can now be easily recognized by any practitioner who owns a microscope and almost as easily treated.

It may be stated as a general rule that accuracy is the first standard requirement of all method, and simplicity the next. Of two accurate methods the simpler is, as a rule, to be preferred for clinical use. In the morphological study of the blood the attention of students is directed mainly to the ways of counting cells, and of differentiating the various types of white corpuscles after they have been fixed and colored by one or another of the stains. Considerable practice is required to attain proficiency in any single method. The expert hematologist who reflexly measures the exact amount of blood necessary for counting white cells, earlier in his career passed through the stage when every step meant as much education as was necessary when he learned to walk. Yet once acquired such methods are extremely simple: a leucocyte count is generally considered the "easiest" work in hematology. Far simpler, however, and much more important than any other single method of studying the blood is the use of fresh unstained specimens. Emerson in his textbook of Clinical Diagnosis says: "Some things can be studied only in the fresh specimens, and more can be studied there than in the stained."

The amount to be learned with a small expense of energy is the only apology needed for calling attention to this subject.

By studying fresh blood the physician is able to determine certain facts impossible with the stained specimen, and at the same time to estimate with a considerable degree of accuracy such important data as the number and relative proportion of the white cells, the number of reds, the relative amount of hemoglobin in the reds, poikilocytosis, and especially the presence of malaria parasites. But before an appreciation of the value of this study in pathological conditions is possible, precise technique and a knowledge of the normal conditions and "normal artefacts" must be acquired. The technique is of the simplest, and depends on absolute cleanliness of the glassware employed. Cover slips preferably ¾-inch square, and slides should be thoroughly cleansed with soap and hot water, then washed in alcohol and ether, and preferably kept in alcohol. At times the glassware received from the agents is so dirty as to require preliminary treatment with concentrated acids. Drying is best done with an old handkerchief or piece of linen free from lint. The best results are obtained by having the glassware slightly warmed by the friction of drying just before use. The blood sticker to be used depends on the custom of the worker; the writer prefers the small lance with a sticking blade about ⅜ or ¼ inch long. The same precaution as to the choice of site of the puncture, and the avoidance of cyanosis or edema must be maintained as is necessary with leucocyte counting.

The size of the drop should be about that of a pin head. The fingers ought not to touch the glassware; the cover slip held in a small forceps is allowed to touch the drop of blood, avoiding carefully the skin. The cover is then gently dropped on the slide, and if the preparation is well made the blood will spread in a thin uniform film almost to the edge of the cover slip. The drop should never be so large as to spread beyond the cover, and one must never attempt to press on the cover slip or manipulate it in any way. It is important that the blood does not extend quite over the whole surface of the cover slip, as the cells vary in their distribution and the whole drop should be studied. The preparation thus made can be examined at once under the oil immersion lens, or will stay for one to three hours, though it is better to put a little vaseline around the edges of the cover slip if the study is to be deferred. The sooner one is able to look at the specimen the more rational will the interpretation be, as the recognition of the gradual production of degeneration forms is of the greatest importance.

The whole value of the study of fresh blood depends on differences that cannot be based on mathematical calculations, but must be dependent on comparative observations. It takes only a few examinations of normal blood to recognize the approximate normal proportions, the shape, size and color of red cells, etc. It is wise always to employ the same microscope with as closely as possible, the same light, especially if one hopes to estimate the relative hemoglobin content of the individual cell. The

normal red cell is of a fairly constant size of 7 microns with a slightly greenish yellow tint. The shape rarely varies to any extent. In a well made specimen rouleaux formation should not be seen, but occasionally one finds blood in which it seems impossible to avoid this. If the specimen is allowed to stand for some time, some of the most interesting pictures ever seen under the microscope appear. The indented ragged edges of a crenated cell generally indicate mechanical injury, but may mean lessened resistance on the part of the cells. A rather common type of cell is the "thornapple," differing from pure crenation in that not only is the rim involved, but the entire surface of the cell seems covered with prickles, or at times only a single stem sticks out from the surface. The common dumb-bell shape is caused by the cell rolling on its side: the biconcavity of the cell explaining the peculiar appearance. Marked variations in size of the red cell in normal conditions are rare. The presence of very small or very large cells generally indicates pathological disturbances, and will be discussed later. Likewise changes in shape of the healthy cell (poikilocytosis), are rare in a well made preparation, but may at times be seen. It is of considerable diagnostic importance to note whether such changes are present as soon as the preparation is made or appear only after it has stood. The pathological significance of a true, spontaneous poikilocytosis will be commented on later; artificial poikilocytosis may be seen in any specimen, and is due, as a rule, either to pressure or to age of the specimen. Slight elongation of the cell with pointing of the ends so that adjacent cells touch is common; but this is undoubtedly a mechanical effect, as can be demonstrated by slight manipulation, causing a current in the field.

Any specimen, no matter how healthy it may be when first made, will develop, usually 30-70 minutes after standing, degenerations inside the red cells that at first sight are most puzzling, and often are extremely difficult to differentiate from malaria parasites. These "endoglobular degenerations" may be seen as small or large hyaline like bodies generally occupying the center of the cell. They usually are round; but the size and shape may vary greatly. Some are small rods like bacteria, some small bodies, others large, and with bizarre shapes. Motility is not uncommon, but they are never amoeboid. Careful focusing reveals them usually as highly refractile, changing size on focussing. This change in size is never seen in parasites, and is one of the most valuable differential points in diagnosis. Another important fact about these endoglobular degenerations is the marked increase in their number during observation. A specimen which studied immediately shows none of these bodies will shortly show a few, and finally more and more red cells become "invaded" in a manner that is impossible in malaria.

The total count of the white cells can be estimated fairly well by their relative number to the field, and with a little practice it is not at all difficult to recognize a normal count, leucopenia or leucocytosis. To properly estimate the number of white cells it is necessary to look over the whole

preparation, for the well known tendency of leucocytes to congregate will otherwise give a wrong impression. Occasionally, despite the greatest care, this tendency to clump will mislead the observer, but on the whole, the writer has found that it is not difficult to estimate "normal counts" (6000-8000) "below normal" and "above normal." When apparently above 10,000 a practiced observer can approximate the whites within 2,000, as for instance "12,000 to 14,000." In a series of 50 observations controlled by simultaneous leucocyte counts, these estimations were found to be surprisingly accurate.

Not only can the total cell count be approximated, but each individual cell can be classified, and in this particular, it would seem that this simple method is of greater value than stained blood. A polymorpho-nuclear neutrophilic leucocyte shows the hyaline nucleus with shape varying as in the stained specimens; the granules are fine, often moving freely, and somewhat irregular in size. These fine granules can be distinguished quite easily from the coarse uniform sized, highly refractile granules of the eosinophilic leucocyte. Both the neutrophilic and eosinophilic polymorphonuclear cells possess amœboid movements. As a rule the eosinophile is the most actively motile cell in the blood. The small mono-nuclear usually shows the nucleus slightly notched with a very narrow rim of cytoplasm, and often one, or a few small black granules in the cytoplasm; the large mono-nuclears can be recognized easily by the shape of the nucleus, the amount of cytoplasm, the absence of granules, and the size of the cell. These cells can be separated with such ease that were it possible always to prevent currents from disturbing the field, a differential count could be made. In two abnormal blood pictures, which recently came under observation, differential counts were made in the fresh which tallied well with counts made on stained specimens.

"Blood dust" is seen in almost all bloods, and consists of granules of different sizes floating through the field. The size of these grains corresponds with the granules of leucocytes, and it is supposed that they are actually extruded from the leucocytes. One also sees in the fresh specimen fibrin and platelets, often together; the former forming a net work of fine threads enclosing in its meshes the platelets. It is well to recall that in the fresh blood, platelets never are motile.

The most common use to which the study of fresh blood has been put is in the diagnosis of malaria. With a clear picture of the conditions of endoglobular degeneration and of the various types of white cells recognition of a malaria parasite should never be difficult. The morphological characteristics of the type of plasmodium are more clear-cut in the fresh than when stained. It is hardly necessary to urge the precaution of not attempting to find intracellular parasites just during or after the chill; the most favorable time for study is between or just before chills. If blood is studied during or just after a chill, when the parasites are as yet not pigmented, some difficulty will be experi-

enced in distinguishing true parasites from various forms of endoglobular degenerations which may simulate parasites; and negative findings should always be controlled by stained specimens. The best pictures showing these similarities can be seen in Emerson's test book: the main differences are that the true parasite does not change its size on focussing, is not as highly refractile, and one does not see the marked increase in number that is so characteristic of red cell degenerations. Furthermore, the presence of an excess of large mononuclears, some of which may contain pigment granules, and free pigment granules in the circulating fluid are presumptive evidence in favor of the presence of the malaria parasite.

The points of importance in the differential diagnosis of the three types of malaria seen in this country may be briefly summarized in a table.

	TERTIAN	QUARTAN	AESTIVO-AUTUMNAL
Red Cell	Large, pale	Small, brassy, Crenated	Small, brassy, Crenated
Parasite	Very hyaline Very amœboid	Waxy Not actively amœboid	Signet ring marked Refractile Slightly amœboid
Pigment	Fine, light brown Distributed generally Very active	Coarse, black Peripheral Not very active	Fine brown Small amount Usually nonmotile
Segmentation	15–20 Irregular formation	6–12 "Rosette"	Not seen, but characteristic crescents and ovoids are present

In the study of anemias this method gives excellent results. In pernicious anemia undoubtedly more can be learned from the fresh blood than from any other single method, and practically as much as from all others. The marked diminution in red cells is apparent; poikilocytes, micro- and macro-cytes are seen; and as a rule the color index can be well approximated by the amount of hemoglobin in the individual cells. Some care is needed in recognizing nucleated reds, but once seen they can easily be differentiated from any other cell. The nucleus is very pale, not refractile, and the edge is not always sharply cut from the hemoglobin—containing cytoplasm. The same rules as to size of cell and size and position of nucleus which are used in classifications of the various types of nucleated reds in stained specimens apply in the fresh. The characteristic leucopenia of pernicious anæmia can be well appreciated in fresh specimens.

The difficulties often encountered in staining leukæmic blood at times delay the diagnosis, whereas the study of a fresh specimen would in every case give the clue, not only as to the nature of the disease, but as to the predominating type of cell. In various other disease conditions the practitioner will find the examination of fresh blood most valuable. It is easy to carry the necessary glassware in one's satchel, and when the counting apparatus is not handy fresh specimens may be made for study at the office. For instance, in a doubtful case of fever the fresh blood picture put in proper perspective with the clinical findings may absolutely exclude certain diseases and may suggest the correct diagnosis. In abdominal conditions, when the question of leucocytosis is important, the fresh blood is a handy index, but its indications should, of course, be controlled by the actual count. In fact, it may be stated as a general rule that a preliminary study of fresh blood specimens as a routine measure will in all cases indicate the line along which further work is best continued, and will in most instances be of absolute diagnostic value.

IMPROVED METHODS FOR THE EXAMINATION OF SPUTUM AND BLOOD IN RELATION TO TUBERCULOSIS.

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Clinical and laboratory findings must cover each other in order to make a diagnosis scientifically correct. Yet this often seems to be impossible, especially so in tuberculosis, where in the incipient case the clinical finding may be negative, while in the advanced case the laboratory finding may seem negative. I say "seem" because the fault is with us and the time will come when our present fallacious methods will belong to the past.

I shall not refer in this paper to the specific methods of diagnosis, but limit myself to microscopic means only.

The belief existed for some time that the Ziehl-carbol-fuchsin stain is ideal. Yet many a case was neglected and treated for anything else but tuberculosis on account of a negative Ziehl. We were aware that in the pus of abscesses the tuberculosis bacilli were not found, yet the tubercular origin could not be doubted. At the same time, this knowledge was not applied properly to the secretions and pus from the lungs. The clinical picture often showed a rapidly progressing pulmonary tuberculosis, yet the sputum seemed to be free from TB. While the Ziehl stain is adequate for ordinary routine work and as a first step to a diagnosis, yet beyond this it is of no value.

To prove this I must go back to the natural history of the so-called bacillus tuberculosis. It is a member of the group actinomyces and belongs to the genus mycobacterium. This genus has the peculiarity of being more or less acid-proof, which peculiarity is most marked in the most important species of the genus, the mycobacterium tuberculosis Kochii.

This peculiarity of being acid-proof is confined to an envelope, a chlamys, which is no vital part of the microörganism itself and the existence of which depends upon age and surroundings. Young colonies and pus seem not to favor the formation of this envelope, which is stained best by carbol-fuchsin and fixed with picric acid. By this fixation the TB often can be distinguished when the fuchsin alone will be negative.

This envelope seems to consist of fatty acids and is of a serous nature. It is more like beeswax than any other known substance because the digestive organs of the galleria melonella have the faculty of dissolving it entirely without killing the germ.

Treated with various solvents, the aid-resistance is diminished and various bodies can be extracted, namely: fatty acids (palmitic and arachidic), acid esters of higher alcohols (palmitic and stearic) and the acid esters of ceryl and myricyl alcohols.

The composition changes according to external conditions. I refer to the work of the older Klebs, and this change of its acid-resistance can be produced artificially (*Fontes, Zenner*). The envelope, when present, stains always with fuchsin and picric acid and b-tolin. Sometimes I have been able to make nice stains with chinaphtalon. Occasionally one can detect the envelope more or less when using soudan iii., indulin 6b, fat-green, gallacyamin and even dimethylaminazobenzol.

This waxy substance is more or less the same in its complex nature in all mycobacteria and has been extracted and used therapeutically by Deycke under the name nastin. The virulence of the TB is not impaired by the absence of the envelope, while its substance has for itself a specific toxic action.

The TB belongs to the class of organism in whose true bacterial body, the mycoprotin, when treated with jodin and a rosanilin-derivate, forms a combination therewith and accepts the so-called Gram stain. While the fact that the TB stains with Gram is old, the recognition is of its great importance is relatively new and is mostly an achievement of *Much,* who used it to demonstrate the granulations of the bacterial body of the TB. It is true that the TB is not the only organism which accepts the Gram-stain, most sporulating bacilli do and also the pneumococcus, and others, but there is such a vast difference in their morphologic appearance that a mistake is hardly possible to the trained eye.

A proper preparation of the sputum is of great service. Many aids have been suggested and one of the most valuable is the treatment of the sputum with a hydrocarbon (naptha, benzol, ligroin). The TB, on account of its waxy envelope, will adhere to the hydrocarbon and after shaking the mixture well and allowing to settle, it will be found that the TB have collected just in the separation line between the sputum and the hydrocarbon (Halle and Nitsche).

Of greater value is the method of Xylander and Uhlenhuth, which promises to become general. Many, like Seeman, Meyer, etc., have adopted it. The sputum or pus is mixed with antiformin, which is a mixture of liquore sodii chloratae and sodium hydrate. This brings about a liquefaction of every organism except the TB. All TB will be found in the flocculent masses, which deposit on the sides and the bottom of the glass or a quick sediment can be obtained by centrifugation. In this manner a sputum which has only a very limited number of TB can be examined without the tedious and often resultless process usually employed.

Haserodt combined the use of the hydrocarbon with the use of the chlor-alkali solution.

We have adopted at our institution a routine which so far has been

very satisfactory. Whenever time allows we triturate the sputum according to the method of Xylander, using enough of the chlor-alkali solution to dilute to about 20 per cent. But when time is pressing we take one loop of sputum or pus, one loop of the chlor-alkali solution and three loops of water and rub the mixture fine. After thorough drying the film is fixed with as little heat as possible. The slightest overheating will spoil the film, and for this very reason and to obtain a good fixation at the same time, I have modified the customary technique inasmuch as during the whole process of staining no water is allowed to touch the film.

After this careful fixation we apply my modification of the stain which is a five per cent. alcoholic solution of crystal violet to which five drops phenylamin have been added and the solution filtered. It will be serviceable only for a few days and must be prepared fresh to obtain the best results. The stain is applied hot, and acts for three minutes. The surplus is poured off and an alcoholic jodin solution (2 per cent.) is applied in this manner that the film is immersed face down. This is done to have all precipitation removed from the preparation. The jodin must act for five minutes. The next step is immersion in alcohol face down, decolorization in nitric acid alcohol (30 per cent.), washing in acetone-alcohol, clearing in xylene-phenylamin and, after drying, mounting in the usual manner. All these steps are done with the film face down. Should there be a thick film, the action of the jodin is repeated.

If any contrast is desired the customary tinctions can be used.

This process is not easy at all and it is a satisfaction to know that in the laboratory at Eppingen, where the modified Gram originated, mishaps are frequent. Here, more so than with any other stain, accuracy, patience and perserverance are necessary.

The controversy between Spengler, Fuchs-Wolfing, etc., one one side and Much, Behring, Withs, etc., on the other, about the nature of granula and splitter, ought to be nearing an end. Spengler deserves undoubtedly great merit in furnishing us the picric-stain and by describing fully the splitter and calling attention to their importance, notwithstanding the fact that Koch observed the splitter before him. To Much belongs the credit of having called attention to the granulations and showing us the way to a better knowledge of the morphology of the TB. Fuchs-Wolfing and others claim that the splitter and granula are identical. While this is not quite correct in one sense, yet there exists the same relation as between the rods stained red and the granula-chains stained with Gram. In one case the envelope is stained and in the other the bacterial bodies.

It is known that the TB, when stained in the usual manner, presents a difference in the density of color, sometimes like vacuoles and sometimes like spores. Weigert's stain will show spores. They were considered by some to be Babes metachromic and Ernst sporogenic bodies, by others, Betegh and others call them true spores. They are evolution

forms of the TB. The TB multiplies, as a rule, by transverse fission; in cultures apparently, also otherwise producing the dichotomous branching. This fission occurs within the envelope and therefore the granula can be compared with chlamydospores within a dhlamydobacterium. The splitters are nothing but divisions or fragments of the rods which have retained an irregular shape on account of the waxy nature of the chlamys.

I have made experiments which are conclusive and invite corroboration by others repeating same. Stain a sputum, which is known to be rich in good rods, with gentian-violet-anilin-water; make sure of producing an intense coloration and register the rods with the mechanical stage. Remove the oil with xylene-alcohol and apply Gram.

The very rods which appeared purple first will now show mostly as granula-chains, some may appear bipolar and many independent granula will be seen.

We can go further. Stain with the picric acid fixation, register the location, remove the oil and apply Gram. Now the former splitter, not entirely decolorized, will show as granula of various size.

What Deycke said about the rods is true about the splitter, the Gram will show the bodies of which the fuchsin showed the envelope.

What we learned in regard to sputum and pus can be applied to the blood. Only a few years ago no less authority than the great diagnostician, Sahli, claimed that TB are found only in the blood in acute miliary tuberculosis, and there in small numbers. Cornet held a similar view, which was the opinion of the day. Rosenberger claimed early this year that he found TB in the blood of every case of tuberculosis, even in the very incipient. Forsyth was not able to find them in all cases, and we had about the same result. This simply means that there were so few that they were not brought within the field of the microscope. It stands to reason that a very limited number may escape the most careful searcher.

On ground of recent experiments, Neumann and Wittgenstein, it stands also to reason that TB may be in the circulation and not produce any symptoms at all, and not produce any lesion beyond the local in the pulmonary tissue and produce new lesions there. It has been demonstrated that the pulmonary tissue differs from all other organic tissues by its having a predilection for tubercular infection and that therein the TB can retain its virulence for a long time. I refer to the old burial experiments of Malet-Codeat, Falk, Schottelius and the new work by Neumann and Wittegenstein.

There is no reason unless the local focus be encapsulated hermetically, why some TB should not enter into the circulation all the time in every active case where they either become attenuated, destroyed by phagocytotic processes, or, not so frequently, lead to new infections but producing all the time antibodies which in return assist in their own destruction.

Here I must refer to the report of Hugenuin, who found numerous TB in the arterial circulation of a six month fetus, from a mother in ad-

vanced phthisis, but neither placenta nor any fetal organ showed microscopically or macroscopically any sign of tubercular lesion.

Systematic examinations of blood lead us to the discovery that the number of various microörganisms in the circulation is astonishing. To avoid errors it is always best to use the Gram stain. This is customary with us and led to the additional discovery that the pneumococcus-like organism is the most frequent and its number seems to be in relation to the febrile condition of the host. Therefore, for an exact diagnosis, a careful study of the blood will be necessary in each case; the mixed infection needs more careful investigation, and such investigation may lead to the unexpected deduction that the TB is less destructive than its mate and the prospect seems brighter again that this mate is less resistant to active therapeutics than the tenacious TB.

The pneumococcus is recognized by its retaining the Gram stain and morphologic character. Ordinarily it may be mistaken for the micrococcus catarrhalis, but this does not stain with Gram. Wirths, and especially Webb, in his excellent article in Klebs' new book, laid more stress than others upon the import of the mixed infection caused by the pneumococcus or a similar organism. They, however, viewed same only from its relation in the sputum to the opsonic index. I consider its significance by its number in the circulation. There is no desire on my part to lower the importance of studying the opsonic index in every case where a specific therapy may be indicated. I call attention to the information which may be gained by a close study of the blood along these lines. The bacteria can be counted and this gives us the possibility of an index of the severity of the infection.

We are using in this institution a technic which is rather primitive yet and open to much improvement. Some result can be obtained by the use of the ordinary counting cells and a good one-eighth immersion objective; but only a well trained microscopist will derive any satisfaction. We are experimenting with modificating the cells in a manner which may permit the use of higher powers by approximating the ruling to the objective.

I have worked out a technic, which, while somewhat complicated, is fairly accurate and serves our purpose well. A melangeur, as used ordinarily for the leucocyte count with the Thoma-Zeiss hematocytometer or its modifications, is filled with blood to the 0.5 mark, followed by a citrate dilution to 11. Of this blood-dilution one millimeter is measured off with either an accurate hematocrit scale or a fine pipette which I marked especially. The melangeur of the antiquated Gower instrument is sufficiently fine. This millimeter of dilution is distributed on a warm slide in the manner that a row of finest touch films are made. As a rule one millimeter will make about eight. The smaller these films, the more easy the counting will be. The films are allowed to dry and fixed with a three per cent. acetic acid alcohol. Heat must be avoided. The staining is done with borax blue.

Several slides are prepared in this manner, the more slides counted, the more accurate the result will be.

Each of these films is thoroughly searched and the organisms counted, which will be relatively easy if pains were taken to make the films small.

The sum of the organisms of all films counted is divided by the number of slides used and multiplied by twenty. The result is the number of organisms in one millimeter blood.

The beginner does well to make the dilution with an accurately graduated tuberculin syringe, this will give an ample supply to insure a series of suitable slides.

A great objection against my method may be that the borax-blue stain allows no differentiation. This objection is overcome by the fact that a differentiation can be made before the count by any suitable method and the educated eye will recognize the proper variety in the count-slides. A certain amount of experience with microscopic technique is necessary and without it no such work should be attempted.

Primitive and crude, as my method may be, it is a step forward because it would be unwise to attempt even to judge the number of bacteria in the circulation by adopting a careless, unscientific and deceiving method like the one in vogue with the examination of sputa, which deceives the patient and his physician by accepting a standard of "a few," "many" or "very many" in one field, which field must vary with each preparation and with the individual who makes the same.

I again call attention to the value of a proper recognition of the pneumococcus. The proteolytic power of the TB is normally less than that of the pneumococcus. The pneumococcus has also a marked hemolytic action; I refer to the green-color-play in the hemoglobin cultures. On the other hand is the attenuation of the pneumococcus more easy and the tenacious virulence of the TB well known. Some claim that the two organisms are to a certain extent antagonistic. This is an error. There exists no enantobiosis between the two; on the contrary, a symbiosis seems to be established. Therefore every improvement in the methods of recognition of these organisms and the creating of indices for same, which will be alike with each worker, is a step forward, no matter how trifling.

Small drops make the mighty ocean.

I must give proper credit and thanks to my assistant, Dr. H. J. Hoag, whose conscientious collaboration made this work possible.

SOME OF THE CUTANEOUS MANIFESTATIONS OF DISEASED DUCTLESS GLANDS AND THE APPLICATION OF ANIMAL THERAPY IN CERTAIN SKIN DISEASES.

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The rôle of the ductless glands and their secretions must bear an intimate etiological relation to many diseases, both general and local. The action of the skin, when one or more of these glands are diseased, has made the study of the physiological action of these glands and the application of their extracts one of great interest to cutaneous specialists, and the dermatological literature of all lands is filled with the reports and findings of some of the most brilliant observers in this special department of medicine.

The cutaneous manifestations observed during the course of diseases of the thyroid have for a long time attracted the attention of dermatologists, even before Gull, Ord and Horsley published their classical description of thryoid disease and myxedema, various cutaneous phenomena of unknown etiology were observed and noted; now many of these are known to be caused or influenced by disordered thyroid function.

The dermatoses observed in affections of the thyroid do not always seem to be the direct result of a disordered condition of the gland itself, but rather a sequel of the general systemic changes incident upon diseases of that gland. The irregularity of the circulation, the nervous phenomena are each capable of producing certain dermatoses in one predisposed.

This predisposition may, perhaps, explain why one person suffering from Graves disease will have myxedema, while another with the same thyroid condition will have little or no cutaneous impairment. Perhaps the best known skin manifestations are the edemas; these have been divided into four varieties. First, the edema due to feeble heart action; second, edemas of nervous origin; third, transient edema, and fourth, the true myxedema of Ord. If the heart is weak the swelling of the skin will be limited to the eyelids, legs, and knees. This swelling may become general, either early or late in the course of the glandular disease, and is more or less persistent, and only improves as the cardiac function is strengthened. This edema does not seem to be affected by thyroid feeding. It would seem as though impaired renal function might also be a factor in this variety of edema.

In addition to the cardiac edema just described, there is a non-pitting edema that is confined to the lower extremities, the swelling very closely

resembles myxedema, except that the skin is not dry and branny and does not have the characteristic, translucent appearance; it is not influenced by thyroid feeding, but does improve when the heart is strengthened.

Among the nervous edemas we see examples of transient or fleeting swellings affecting the ankles, feet, back of the hands, eyelids, and the supra-clavicular region; sometimes one side of the face will be attacked alone, again one side will be more swollen than the other; or there will be a circumscribed swelling, evidently of vaso-motor origin, resembling angio-neurotic edema or giant urticaria.

Closely allied to the neurotic swellings are the transient erythematous eruptions met with in the course of thyroid disease, sometimes the erythema resembles urticaria factitia; again it is like the urticarial erythematous type of erythma multiforme. This cutaneous symptom, if once present, becomes worse as the general disease grows more severe.

It is hardly necessary to take up in this paper the consideration of myxedema, for it has been described so many times that but little remains to be said. It should be remembered, however, that myxedema is caused by an infiltration into the deep skin and subcutaneous connective tissue of a mucin. In myxedema the skin is usually dry and rough, with a translucent look; it is, as a rule, harsh and hard to the touch, with often a fine branny scruffiness. The perspiratory glands become inactive until there may be complete anidrosis. The hair grows harsh and dry and eventually there is scalp alopecia. Some authors have described elephantiasis as affecting the legs, labia, scrotum and eyelids, which they claim is not true myxedema because it is not affected by the administration of thyroids, nor is it influenced by any cardiac condition.

Another interesting condition of the skin is hyper-pigmentation. It may be an accompaniment of myxedema, or appear independently. Sometimes the discoloration is as deep as that seen in Addison's disease; again, it may appear only as a few yellowish spots on the arms, face and legs. If the deep pigmentation is from a diseased thyroid, it is rare to see the minute deeply stained spots on the arms, and the mucous membrane is not discolored as in Addison's disease. It has been suggested that when the pigmentation was marked that there was disease of other ductless glands, as the supra-renals or the pituitary body. A few years ago I had the opportunity of watching a case of this character that presented all the symptoms of Graves' disease.

She was a woman past the climacteric; she had exophthalmos, hyper-pigmentation of the skin, but not of the mucous membranes, loss of hair and nails, translucent erythemas, fugitive edemas, and finally scleroderma and sclerodactyle. Autopsy showed cystic degeneration of both thyroid and supra-renal glands.

The pigmentation in Graves' disease occurs chiefly as an excess of the normal pigment of the body, the sites that show this excess are the

orbits, face, neck, areola of nipple, abdomen and flexors of the arms and legs. It is also liable to occur on those parts of the skin exposed to constant pressure of the clothing. The discoloration varies from a yellowish tint to a deep bronze, sometimes the pigmented patch fades imperceptibly into the skin, then again there is a sharp line of demarcation. In some cases where the hyper-pigmentation is very marked there is associated with it patches of leucoderma. Atrophy of pigment (leucoderma) is also seen in other thyroid diseases. This is undoubtedly trophic in character, for it is often associated with circumscribed patches of baldness (alopecia areata).

Universal loss of hair is seen in advanced thyroid disease. This may occur without myxedema, and localized baldness, with or without pigmentary changes, is met with early in the disease. Cases have been reported where enlargement of one lobe of the thyroid, with projection of one eyeball was accompanied with loss of hair, eyebrows, and lashes of the corresponding side.

Hyperidrosis is one of the common symptoms of some thyroid disease and is more marked in the severe cases, where there is tachycardia, pyrexia and emaciation; it is a manifestation of a profound vaso-motor instability. The sweating may be local or general. Often the skin is bathed in a sticky, greasy sweat, similar to that sometimes seen in general paralysis. Cases have been reported where the sweating affected only one side, usually the right, corresponding to the unilateral thyroid enlargement. Other cases have been reported where under excitement the sweating was limited to the right leg below the knee. With the sweating, there may be transient flushing of the face and the subjective sensation of heat. This somewhat constant stimulation of the sweat apparatus has in some instances produced a chronic inflammation and disease of the sweat glands, hydro-cystoma.

Pruritus is occasionally a symptom of Graves' disease and is usually found in those cases where the skin feels dry and harsh, resembling symptomatically that of pre-senile skins.

Another skin condition that has not been very extensively noted by authors in an eczematous-like erythema, that may remain a constant symptom or else precede the myxedema. It bears clinically a close resemblance to erythematous eczema; usually affecting the hands, face, and sometimes the flexures of the joints. It differs from erythematous eczema in not being especially pruritic, although subjectively the skin feels hot and tight; at first, there are no evidences of edema, and the process does not appear to be especially inflammatory. This exanthem is sometimes preceded by the transient angio-neurotic erythema spoken of above. It may remain only a short time, or persist for several days and finally disappear with or without treatment. If there are a number of attacks, each subsequent attack remains longer than the previous one, until the dermatosis becomes permanent without any other cutaneous change. Or, the eczematous-like spot may show evidences of swelling

that continues until a true myxedema is established. I recall a case where this erythema persisted for over two years, and was not influenced by any treatment until attention was called to an enlargement of the thyroid when the cutaneous condition quickly yielded to the proper medication.

Although this eruption bears a close clinical resemblance to eczema, it differs from it in not being pruritic; there is never any exudation and it is rebellious to treatment directed toward the relief of ordinary eczema. I am of the opinion that it is a distinct dermatological condition sometimes seen in certain cases of thyroid diseases. This statement is made after a careful study of personally observed cases and of those reported by others.

If a victim of thyroid disease develops myxedema, and if the swelling of the skin be long continued, true eczema does attack the infiltrated skin, especially that of the extremities. This is a true catarrh of the skin and presents all of the classical symptoms of eczema; it is secondary to the infiltrated and swollen skin, and is quite similar to the eczema often seen in elephantiasis.

Scleroderma is another cutaneous complication of thyroid disease. The hardened skin may be in patches, or it may be more generalized. The localized patches called in this instance morphoea, are generally situated upon the face, arms, buttocks or thighs. Cases have been reported where the scleroderma was limited to the hands and feet. The sclerodactyle resembling the condition of the fingers in Raynaud's disease.

Keratosis and ichthyosis have been observed in patients whose thyroids were not normal, but not necessarily diseased.

Many cases of general ichthyosis of the first and second grade are found to have small and undeveloped thyroids or the gland has undergone cystic degeneration. A few years ago I reported a case of congenital ichthyosis with complete absence of the thyroid.

The patient was the second of a family of five that had this skin deformity. He lived about four weeks. A careful autopsy was made and it was found that the thyroid was entirely absent, not even a rudimentary evidence of the gland was found. The skin from this case was infiltrated with a mucilaginous fluid in which there were found unclassified bacteria. The fluid and microörganisms were principally in the lymph spaces.

People with small or cystic thyroids are likely to have thin and fine hair. This thyroid defect seems in some instances to be congenital. Congenital cutaneous defects as ichthyosis, keratosis, a scanty development of hair, all indicate arrest of foetal development and are often associated with abnormal thyroids, and the conditions are apt to improve under thyroid medication.

In addition to those diseases which seem etiologically related to the morbid thyroid process, there are other dermatoses that must be regarded more or less coincidences. They are psoriasis, which is often

greatly benefited by the administration of thyroids, acneform eruption on the face and shoulders; erythema nodosum, gangrene, icterus, purpura, and double eruption that first resembles the later stage of measles; this eruption is limited to the feet and legs; after it has existed for a few days it becomes purpuric.

The well-known cutaneous symptom of diseased supra-renals, hyperpigmentation, attracted the attention of dermatologists, and led them to think that perhaps other little understood dermatoses might be caused or influenced by diseases of one or all of the other ductless glands. Diseased suprarenals are not productive of many skin symptoms. Hyperpigmentation is common; scleroderma a rare complication. Cases have been reported where the loss of hair was marked. This was only observed in the advanced cases. Pruritus has also been noted especially when the hyperpigmentation is very dense.

Bronzing of the skin, clinically the counterpart of that seen in Addison's disease, has been reported as a symptom of diseased pituitary gland. The production of adipose tissue clinically simulating myxedema has also been noted as an accompaniment of disease of this body. Recently some French observers have suggested that von Recklinghausen's disease, neuro-fibromatosis, was in some way etiologically connected with diseases of the pituitary. It would seem that further study of the subject might prove the suggestion to be a fact, for in the true Recklinghausen's disease there may be exostoses of the bones of the face and head, as well as the neuro-fibrous connective tissue tumors of the skin, this condition resembling the osseous and cutaneous changes seen in certain cases of advanced disease. If this disease can be placed among the cutaneous disorders influenced by diseases of this gland, it is fair to assume that subjects with simple fibromatosis (molluscum fibrosum) may be found to have either diseased or abnormal pituitaries, for if these skin tumors are congenital, or develop shortly after birth, the individual is, as a rule, of deficient intellect, the mental condition being similar to that seen in myxedema.

I have endeavored to briefly enumerate the principal skin affections seen when there is either disease or defects of the ductless glands, but as the study of this subject continues, it is fair to predict that other glands, the "ducted" glands, the testicles and ovaries, and perhaps even structures, as the blood marrow, will be found to have some etiological influence upon some of the less well understood skin diseases. It is a well recognized fact that women with rudiamentary or fibrous degenerated ovaries are apt to be victims of hypertrichosis, while in the male is found atrophy and scanty development of hair, if the testicles are rudimentary.

It has long been thought that the bone narrow had some influence upon the development and well being of the hair. Of course, the latter has no scientific basis, but the comon empirical observation can easily be made a scientfic fact.

While we may decry the exploiting of certain new drugs or therapeutic methods for business gain, it is often these very things that stimulate ethical men to study the subject, and if more of us were to report our clinical successes and failures, there would be no need for the criticism that this or any other new idea smacked of charlatanry.

Animal therapy has been employed in many skin diseases and often in diseases pathologically different. They have been used in three different ways: (1) empirically; (2) when the dermatosis was merely a symptom of some disorder of some ductless gland; and, (3) in those diseases dependant upon faulty metabolism.

At first the various preparations from the ductless glands were used for all sorts of skin diseases in a haphazard way. Then when the internist began using animal therapy in diseases of the glands as in thyroid disease, it was found that the cutaneous symptoms were ameliorated. Now it is pretty certainly established that preparations from certain ductless glands exert a marked influence upon those dermatoses due to faulty metabolism. There is a certain class of skin diseases, those belonging to the erythemato-bullous type, and those of the psoro-eczematous variety, in which the preparations coming under the head of animal therapy seem to do the most good.

Time will not permit of the enumeration of all of these diseases, one or two from each group will suffice. Dermatitis herpetiformis is an example of the first, and prurigo and certain forms of chronic eczema will serve to represent the latter. All of these diseases upon urinalysis and blood examinations show that they are etiologically influenced by faulty nitrogen metabolism.

Disturbances of the nitrogen partition is most conspicuous in the prodromal period of these groups of diseases, and the patient displays other symptoms of intoxication. Examination of the blood at the same period will show high eosinophilia and lymphocytosis. The skin eruption is only part of the symptom complex and if these patients are put on the proper glandular extract, the skin symptoms will subside, the eosinophilia becomes lowered and the urinary evidences of unbalanced metabolism disappears and often a skin that has withstood all sorts of treatment will clear up and remain well.

There is no more use to employ animal therapy empirically in dermatology than in any other special class of disease, for one can only hope to get results after a thorough scientific study of the subject, and I will be pardoned when I say, that my dermatological confreres have contributed considerable toward elucidating the subject of animal therapy.

47 Halsey St.

RHEUMATISM IN YOUNG CHILDREN.

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The knowledge of existence of a specific cause for any definite morbidity deprives the idealists and the æsthetic theorists of one of their many grand opportunities to twist the skeins of medical facts into unravable cords, and minimize the importance of clinical observation at the bedside.

The great and universal prevalence of that most interesting scourge of children, rheumatism, constitutes a distinct clinical entity, of which so much has been dogmatically promulgated, and in whose name so much rot has appeared in our literature, from the neurogenetic theory of causation of Heuter to the theory, which dismisses its function when it announces that rheumatism owes its existence to the end products of tissue metabolism.

Rheumatism, a specific morbid entity, characterizes itself in children as a specific infection by its hereditary relations, its seasonal occurrence, its climatic and race proclivities, and by the isolation by Wasserman in 1889 of a specific diplococcus, called by Poynton and Payne the diplococcus rheumaticus.

Our intimate knowledge of the peculiarities of the rheumatic infection in children is due to the study and writings of Gee, Barlow and Cheadle, and of later years, to the excellent work of Poynton and Payne; especially to the work of the former at the Hospital for Sick Children in London.

These English observers have cleared the atmosphere of mysticism and draped acute rheumatism with a veil of dignity, an entity possessing a distinct pathogeny; a great and severe infection which may and many times does invalid the entire childhood of hundreds of children, an infection that explains many if not most all of our insidious heart affections of puberty.

The study of the manifestations of rheumatism in childhood and those of adult life, convey in comparison such diversity in findings and in their relative significance, as to render difficult the recognition of the same etiological factor. The joint manifestations, both as to significance of involvement and structures of joint involved, the intimate association of carditis, the wide prevalence of rheumatic chorea, and the occurrence of specific nodules, constitute in association with one another a clinical picture that reveals but slight resemblance to that exhibited by acute rheumatism in the adult. The importance of rheumatism lies primarily, then, in an early and prompt recognition and appreciation of the import-

ance of these findings. To dismiss with a wise and all-knowing nod the complaint of vague pains in the upper quadrant of the abdomen, or in the vicinity of joints, as trivial, without a careful and painstaking examination of the heart, is an omission that will weigh against balancing one's just deserts.

The slight articular involvement in rheumatism of early childhood with the characteristic essential grouping of the main phenomena, *i. e.*, endocarditis and vague articular pains, chorea and endocarditis, nodules and endocarditis and the erythema, demonstrate "wider pathological scope and greater variance" of this specific infection in children. The significance of this wide pathological scope is evident from the higher mortality and the complete or partial disability concomitant to chronic organic affections of the heart.

Wasserman is given priority in describing a diplococcus. This organism has been repeatedly isolated by different observers, notably Poynton and Payne in London, Longscope in America and Meyer on the Continent. Poynton was able to produce in animals a multiple arthritis, endocarditis and chorea by injecting this diplococcus. This important demonstration seems conclusive, at least conclusive enough to satisfy the minds of most clinicians. Whether this organism in culture can be differentiated from the ordinary streptococcus matters little.

Cole cites that from 1903 to 1906, cultures gave negative results in joints and blood in all cases of rheumatism in Johns Hopkins Hospital.

Following the literature, we find in the *New York Medical Journal* (Vol. 83), an excellent summary of the different views of various observers on the character of the infective agent, to-wit:

I. An infection caused by the ordinary streptococci or staphylococci with their virulence in some way decreased.—Menzer, Von Leyden and Sahli.
II. Infection by a specific bacillus.—Achalme.
III. Mixed infection with bacilli and cocci.
IV. An infection with a specific coccus.—Poynton, Payne, Beaton Walker, Meyer, Wasserman and Longscope.
V. An infection caused by one of a group of closely allied organisms probably diplo- or streptococci, which cause various grades of arthritic trouble.

It is ably contended by Poynton that the diplococcus of rheumatism is capable of producing broncho-pneumonia, pleurisy and peritonitis, experimental heart disease, including myocarditis; and he also supports the view that simple and malignant endocarditis are but stages in the same process. I wish to emphasize this most important contention that simple and malignant endocarditis are but degrees of the same process. This view will clarify the atmosphere and reports of malignant endocar-

ditis cases will not be so rare in our literature. Von Leube, after very careful elaboration, reaches the most disappointing conclusion—that the embolic findings may be common to both, the one causing an infective infarct with pus formation, the other causing a simple infarct with subsequent infection with pus formation; the differential diagnosis is problematical.

I desire to present a case in point: Jack B., age two years, six months. Patient was a full term, normal child, perfectly well until two years of age. Mother about this time noticed a gradually increasing pallor. He complained at the time of vague fleeting pains located at various places but mostly in the feet. The mother noticed no inflammatory reactions in or around any joints. Was languid and listless and suffered from slight dyspnea on exertion. I saw him in consultation with Dr. Park McDonald six months subsequent to the appearance of the first symptoms.

For the last six weeks he has been complaining severely of pain in the upper quadrant of the abdomen. His mother has noticed some distention of the upper part of the abdomen. The little patient has been running a continuous temperature ranging between 99° F. and 103° F. to 104° F. Pulse 120 to 160.

Status Præsens. Child is extremely anemic. Very irritable. Poorly nourished. Long eye-lashes, hairy skin. No swelling of joints, no petechiæ or ecchymoses. No enlargement of lymphatic glands or tenderness over bones.

Heart. Action rapid. Apex beat one-half inch to left of nipple line. Right border at left border of sternum, base at upper border of third rib. No thrill. Loud blowing systolic murmur at apex which is limited to area of apex; second pulmonic not accentuated.

Chest. Well formed. Normal anteriorly. Posteriorly, the left base is dull. This dullness reaches as high a line through the sixth dorsal vertebra extending into the axilla. Over this area there is normal breathing.

Abdomen. The bladder had not been emptied for sixteen hours, and the child resisted all efforts at abdominal examination. After bladder had been evacuated he was much easier. The left half of the abdomen is more prominent. There is slight abdominal rigidity and some tenderness, especially marked in the left hypochondriac region. On palpation a mass could be readily detected filling the entire left quadrant. The lower border extended as a transverse line through the umbilicus. Its upper border was lost beneath the costal margin. It bulged the left loin. The borders were hard but no notch could be detected. The anterior border came as far forward as a vertical line through the nipple.

Blood Count. Hemoglobin, 55 per cent.; reds, 3,300,000; leucocytes, 20,200. Differential of 500 corpuscles. Polymorphonuclears, 56 per cent.; large lymphocytes, 39 per cent.; small lymphocytes, 0 per cent.; transitionals, 9 per cent. Mast cells, eosinophiles and myelocytes not

present. There was marked poikilocytosis, irregularity in size, a few polychromatic reds. No nuclear reds. Blood plates are excessive. No malarial parasites.

Urine Examinations. Many were made. The following is typical of all of them: Slightly opaque, Sp. Gr. 1022. Minute trace of albumin. No sugar. Urea 15 grms. A few pus cells and granular casts and hyaline casts.

Weight, 26 pounds.

The diagnosis made at this time was rheumatism and splenic enlargement due to anemia. The subsequent course caused me to change this diagnosis to tubercular peritonitis with a terminal tubercular meningitis, or rather, tubercular mass in the brain.

Course. I saw the patient for the first time August 10th. He continued about the same up to September 3rd. At this time he had three severe vomiting attacks without ascertainable cause, followed by enlargement of the liver which rapidly reached two fingers' breadth below the costal margin. The spleen was gradually decreasing in size from the time I saw him.

September 11th, the following note was made: "Boy has been in bad condition for the last four days. Has been vomiting for three days. Following the cessation of vomiting, edema of feet and legs, with puffiness of eye-lids. The urine examination showed no change from the specimen reported. This vomiting made me suspicious of tubercular meningitis. The heart remained the same, except that a thrill could be detected over the base of the heart. No pericardial friction. No pulsation of the liver."

Sept. 12. More edema in left leg than right; is stuporous at times. Patient is passing only from 4 to 6 oz. of urine in 24 hours. Examination of urine unimportant. There is no enlargement of the right heart.

Sept. 13. After eight fluid movements and two profuse sweats in hot blankets edema disappeared. Boy is much better; appetite is returning though capricious.

Sept. 14. While eating was suddenly paralyzed on left side. Stupor supervened with motor aphasia, head turned to right side, eyes (both) away from paralyzed side, complete paralysis of left side including paralysis of the face on the same. Pain, sense of position, tactile sense preserved in paralyzed side. The paralysis is flaccid. Head is retracted with rigidity of the neck muscles. Pupils contracted. Croup breathing. No irregularity in pulse (160) or respiration (68); temperature 104° F. (Rectal).

Sept. 18. No improvement. Retraction of head more pronounced. Herpes of right ear. Eyes straight. Stupor not increasing.

Sept. 22. Reflexes increased. Ankle clonus. Herpes on both ears. Complains severely of pain in the abdomen at times. Is more stuporous.

Sept. 28. Boy is bright but very irritable. Still some rigidity of neck

muscles. No change in paralysed side. Distinct hyper-esthesia of non-paralyzed side.

Oct. 7. Much worse. Profound coma.

And death on October 10.

At different times during this little child's illness there were pronounced articular manifestations involving the ankles, fingers and right hip. No inflammatory reaction was present around or in the joints but there was pain and rigidity, e. g., in the hip. This only lasted for a few days and occurred prior to his embolic manifestations. The specimens demonstrate beautifully the finding of a malignant endocarditis with infraction of the spleen. The abscess of the spleen gradually contracted until it was merely two fingers' breadth below the costal

Fig. 1.

Fig. 2.

Fig. 1. Cut surface of spleen, showing infarction with abscess formation and contraction following. Streptococci were isolated from the pus.

Fig. 2. Same as Fig. 1. Spleen, showing outer surface. Demonstrates the sharp line of infarction.

margin. There was an abscess in the left hemisphere of the brain. The main essentials are merely enumerated in order to emphasize the importance of the contention of Poynton that simple and malignant endocarditis may be but stages in the same process.

Sex Incidence. The English Collective Investigation, quoted by Cheadle in Allbutt's System, give the following statistics: "In the first period of from one to five years of age, boys preponderate in the proportion of 5 to 1. In the next quinquennial period from six to ten years, they become nearly equal, the proportion of 15 to 14. In the next period of eleven to fifteen years, there comes a remarkable change, the

proportion is suddenly reversed, the girls suffering in the proportion of nearly 2 to 1."

There is a true placental transmisson, e. g., a woman in the last months of pregnancy and suffering from acute articular rheumatism, gives birth to a child with an acquired heart lesion.

Cheadle, to whom we owe much, contended that the greater the hereditary factor (rheumatism in both parents) the greater the susceptibility and the more severe the course.

Frequency. Dr. George Still of London has computed that twenty-five per cent. of all medical admissions in the Hospital for Sick Children were for rheumatism, and from fifteen to twenty per cent. of these have or develop chorea.

Symptomatology. (I.) Fleeting pains, definite or indefinite in location. When assigned to joints there may be no inflammatory reaction of tissues.

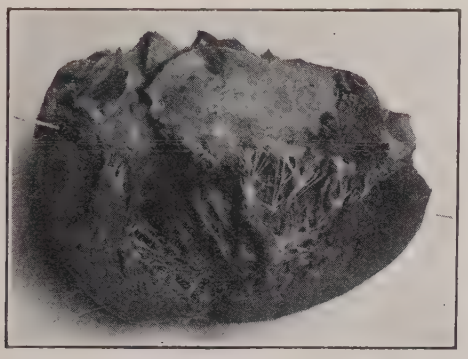

Fig. 3. Vegetations on mural surface and free edges of valve of left heart. Tricuspid, aortic and pulmonary valves normal.

(II.) Pain in abdomen, often spasmodic and radiating. No findings in the abdomen. Still assigns these pains to a catarrhal gastritis. No nausea or vomiting.

(III.) Endo-, peri- or myocarditis in successive stages, or the solitary presence of an endocarditis. Embolism may be the first manifestation of an endocarditis. The degree, character and continuous presence of this murmur offers no criterion for judgment of the degree of defect of the valve segments. I believe with Hochsinger in the nonexistence of haemic or functional murmurs in children. Any systolic murmur not cardiopulmonary in origin or extracardial in origin, e. g., pressure murmurs, can be safely concluded as organic and subject to our general knowledge of interpretation of location.

I wish to call attention to the wider prevalence of mitral stenotic murmurs in rheumatism. I had the good fortune to study several of these cases in Dr. A. E. Garrod's ward at the Hospital for Sick Children in London. The murmur is often soft and blowing, middiastolic in

time, and eventually ends in a true presystolic murmur of the adult type. It may disappear for a time. Its recognition is vastly important from a prognostic point. An *X-ray* picture of the heart is of great assistance in our summary of the condition of the right heart's compensation. Poynton has called our attention to thrombosis in the rheumatic heart without valvular lesions, and to the possibility of embolism without a vegetative valvulitis.

The existence of great residual power in the cardiac muscle of children is sorely hampered by the toxicity of the diplococcus rheumaticus, and we find cardiac dilatation in most all the fatal cases. Broadbent analysed the post mortem records of 150 cases of rheumatic hearts and found dilatation usually present. Myocarditis is always present.

Pericarditis. The importance assigned to pericarditis is fully justified as a cursory search of the post mortem records is made. The presence of fluid is comparatively uncommon. In the 150 cases of fatal heart affections (rheumatic) reported by Sir William Broadbent, only twelve demonstrated more than two ounces of pericardial fluid.

The presence of obliterative pericarditis, and the not uncommon pathologic condition which accompanies it, mediastinitis, are of grave moment. In regard to the frequency of pericardial adhesions, I quote the report of "150 post mortem examinations in rheumatic diseases of the heart. 113 of these had slight adhesions and 77 had complete adhesions." The importance of slight adhesions is perhaps exaggerated and we tend to minimize the importance of the ever present myocardial changes. The total obliteration of the pericardial cavity with the formation of a thick fibrous sac surrounding the heart and acting mechanically to prevent development is splendidly exemplified by the teaching of Cheadle. I have in my notes the following autopsy record:

Girl, age 12 years. Deposits of gelatinous masses beneath sternum in the areolar tissue; a like deposit on the under surface of the diaphragm and supper surface of the liver; also some small deposits in the pleura. This gelatinous material is of a peculiar yellow color, the consistency of gelatin and is, I think, identical with the contents of the rheumatic nodules. The pericardial cavity is obliterated by old fibrous adhesions, the heart being iced by same. There is a tubercle in the bronchial gland. There is a marked enlargement of the right heart, extending almost three finger breadths to the outside of the right sternal line. Slight hypertrophy. Evidence points to old valvular lesions. There is thickening with deformity of the mitral and tricuspid valves. The left auricle is greatly dilated. There is hypertrophy and slight dilatation of left ventricle. There is a stenosis of the mitral valve. Aortic valve normal. Upper surface of liver has thick fibrous covering and spleen capsule is also thickened.

Anatomical Diagnosis. Obliterative pericarditis with mediastinitis; mitral stenosis and regurgitation; tricuspid regurgitation with marked

cardiac dilatation. The clinical course of this case is most interesting as demonstrating the very grave danger of allowing a patient with marked dilation of the right heart to get out of bed. This patient was given permission to get up and within twenty-four hours she was dead from an acute dilatation of the heart (right). There is no doubt but that the obliterative pericarditis and mediastinitis were the essential factors in this marked dilatation.

Difficulty of Diagnosis. The rugæ-appearing pericarditis gives a distinct to and fro murmur, and there is no occasion to confuse this with a supposed pneumococcic pericarditis for the latter never has and never did have a friction murmur. The character of the exudate allows the occurrence of no such findings. Many cases have appeared in our literature which must have been rheumatic and not pneumococcic.

Another very interesting finding in paricarditis with effusion, is the occurrence of a rheumatic pneumonia or a gradually increasing area of dullness commencing in the lower left lobe of the lung. Attention was first called to this finding, I think, by Cheadle. I have notes of the following case, seen with Dr. Garrod in his ward at the Hospital for Sick Children, London:

Boy, age 6 years. Three weeks before Christmas, 1907, was complaining of pains in the legs. Mother noticed no swelling of joints. In about a week or ten days had recovered and was playing as usual. A week after Christmas, 1908, the pains in the legs returned and there developed a hyperesthesia. The boy would cry out when touched; pains also in arms. No diarrhea or vomiting. No hæmaturia or blue-gums. He complained of some dyspnœa on exertion. Temperature 101° F., pulse 140, respiration 48. Urine normal. Some tenderness in right iliac fossa.

Heart. There is a marked area of dullness extending one finger breadth to left of nipple line, and two finger breadths to right of right sternal border. The dullness extended as low as the lower border of fifth interspace and over sixth rib. There is almost complete flatness over this dull area. There is a typical to and fro friction sound over and above this dullness. The apex beat indistinct. In the course of two weeks this dullness was diminished, a mid-diastolic murmur was heard and within the apex. Two days previous to this time a small spot of consolidation was revealed by percussion in the lower portion of the left lower lobe of the lung. Over this area there was bronchial breathing. A week later this had increased until two thirds of the left lower lobe was involved. There were no constitutional symptoms. No especial elevation of temperature (99). This finding must be in the nature of an atelectasis.

The English literature abounds in the citation of numerous cases of rheumatic nodules, but in our country they are rather rare. I have personally seen in London a case of endocarditis and chorea showing

at least one hundred well developed nodules. The erythemas, excepting erythema marginatum, are of doubtful rheumatic origin. In the ten cases of erythema modosum which I have seen, there were present no valvular finding nor had they had chorea. Time forbids entering into a general discussion of chorea, but suffice it to quote from Sir William Gowers, that valvular disease is found in 90 per cent. of all fatal cases of chorea, and the presence of rheumatism in 29 per cent. of the cases before the advent of true chorea.

Prognosis. The prognosis is intimately dependent on the individuality of the observer, the significance assigned to all indefinite pains around joints and especially abdominal pains in very young children, the systematic examination of the heart in all children, the social status, climatic conditions, the hereditary factor, the presence of nodules, pericarditis, etc. The character of the heart lesion, the liability of girls to break down at puberty, and the judicious management of right heart dilatations. If these factors are borne in mind, our prognosis may show radical difference from that given in text-books.

Treatment. Salicylates with double the dose of sodium bicarbonate should be given in large doses. I have seen a child of five years taking six hundred grs. in the twenty-four hours, with double the dose of sodium bicarbonate to prevent acidosis. A child should at least get from 40 to 60 grs. in the 24 hours.

Allow me to close this paper with the citation of a typical case of acute rheumatism in a child of three:

E. S., age 3 years. The daughter of a physician. The child has been perfectly healthy since birth. Uric acid diathesis in mother. Mother is said to have had mitral regurgitation. Paternal grandfather died of acute articular rheumatism at the age of 37. Child had been confined to her bed two weeks previous to consultation. She was put to bed for fever, abdominal pain and some slight distress around the joints. For a few months previous to confinement child had suffered from a few attacks of tonsilitis, had often ceased play with the complaint of being tired and was at these times listless and inclined to lie down. She complains of chilliness. She is cool to touch, acid perspiration and is of high nervous tension. Temperature has been ranging between 100° F. and 103° F. Pulse 100 to 120. Slight cough. Constipation. Stools contain much mucus.

Healthy looking female child. M. M. good color. Very bright mentally. Prominent abdomen. Lungs normal.

Heart. No thrill. Apex beat outside of nipple line. Cardiac dullness extends one finger breadth beyond nipple line. Right heart not enlarged. Upper border of cardiac dullness slightly elevated if at all. There is a soft blowing systolic murmur heard best immediately within the nipple line at the apex. The murmur is transmitted to the axilla, is unaffected by position or pressure; holding the breath does not affect its intensity.

There is an accentuation of the second pulmonic. Spleen is palpable, extending two finger breadths below the costal margin. The systolic murmur is appended to the first sound of the heart.

Blood. Reds, 5,000,000. Leucocytes, 11,400. No malarial parasites or Widal.

Urine. Normal.

She was placed on 40 grs. of salicylates with double the dose of sodium bicarbonate, and within four days the temperature was normal. Two weeks later the following note was made:

Cardiac dullness within nipple line. Systolic murmur now displaces first sound. Spleen is barely palpable. Mucus has disappeared from the stools. No pericardial involvement. Murmur unaffected by holding the breath, position or pressure. There is an irregularity of the heart and intermittency was noted; the latter did not represent a missed beat of the heart but a hurried or incomplete tone. Has complained of pains in the fingers several times. Fever again occurs after the salicylates are dropped. There developed an acute psychosis, with which I will deal in another paper.

621 Commerce Bldg.

SPECIAL ARTICLE.

INDISCREET CHAPTERS IN HISTORY.

(Les Indiscrétions de l'histoire.)

By Docteur Cabanes.

Translated by Dr. Philip Skrainka.

CHAPTER I.

Louis XI.

Judged by History but Explained by the Science of Medicine.

(continued from page 683.)

But though one should not burden oneself with too much testimony in establishing a retrospective diagnosis, there is, truth to say, one other source of information which is not negligible as regards this matter, albeit out of the regular and ordinary course—namely, what I have elsewhere described under the name of hagiotherapy. To cite the authoritative opinion of a master in the matter of historic pathology—an opinion with which I fully agree—"hagiotherapy alone ought never to serve as a basis for the establishment of a diagnosis, though as a supererogatory diagnostic point it is not without great interest, since it confirms diagnoses which are reconstructed by means of symptomatology and therapeutics."* As numerous archives attest, Louis XI. repeatedly invoked the succor of St. John the Baptist, St. John the Evangelist, St. Giles, St. Claude and St. Paul, all of whom were thought to be specifics in epilepsy!**

Could credulity go further? And when we read in a contemporary work from the pen of his intimate friend, the French Ambassador to Rome, that the king was afflicted with "comitial-sickness,"† we surely have confirmation of what many of the accumulated proofs were instrumental in making us suspect—namely, that Louis XI. was an epileptic.

*Aug. Brachet, op. cit.

**Broc de Segange, les Saints Patrons de corporations, etc. 2 vols.

†This name is sometimes used because, as some claim, its origin is derived from "the sickness of the comitias," in memory of Julius Cæsar, who while holding comitias at Rome—in Roman antiquity these were assemblies of the people—was stricken with an attack of epilepsy. But this contention is faulty, since the etymology of the word comes from other sources.

And considering that this illuminating idea as to the king's mentality was apparent even amidst the obscurities of his day, a consideration of his other physical weaknesses must be of some interest in a psychological sense.

Louis was "greatly molested by many maladies," says his chronicler, the ambassador to Rome; "he was tormented until his death by many diverse and piteous maladies," asserts another memorialist. The latter has summed up, in a unique phrase, a pathological brief which reads as follows: "Nam *comitiali morbo* cum interdum premeretur, *elephantiæ* quoque occulta indica præ se ferebat, et *hæmorrhoide* cerebro vexabatur."* I have designedly italicized the three principal episodes in the morbid life of a sovereign who was simultaneously or alternately afflicted with epilepsy, elephantiasis (or leprosy) and hemorrhoids.

* * *

From his twenty-fifth year on, the king was affected with bleeding piles which persisted during the remaining thirty-five years of his life. A series of prescriptions has been found which indicates the continual presence of this infirmity. There was no medication that was not tried in the hope of helping him; fumigation and pieces of jasper which were commonly thought to have "excellent virtues to arrest a bloody flux"† were among the means resorted to. But finally the king lost confidence in the intelligence of his regular doctors and consulted a professor of the University of Pavia.‡ And when all the remedies within the knowledge of man proved ineffective the saints of Paradise and St. Martha of Tarascon, St. Bernadine, St. Fiaere were propitiated by valuable gifts, always, of course, in the king's name.

* * *

Louis XI. belonged to the ever-increasing legion of arthritics, not only on account of his hemorrhoids but also because of herpetic and gouty symptoms. That the king had gout is revealed to us in a letter which his daughter Anne wrote to him.‡‡ For those who know the connection between gout and arteriosclerosis, it is not difficult to predict the final issue. The king, moreover, had deplorable habits: excesses at the table, hunting in winter-time in marshes, continual changes of scene necessitating temporary and hap-hazard lodgings, and, above all, constant excitement due to a mental tension caused by unintermitted war against the enemies of his kingdom. This mode of living could only aggravate his physical and mental state.

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*Robert Gaguin, loc. cit.

†Le Grant Proprietaire des choses, 1.XVI., ch. LI.; cf. Oeuvres pharmaceut. du sieur Jean de Renou (1637); N. Lémery, Dict. universel des drogues simples, 1679, etc.

‡Henri-Maxime Ferrari da Grado, Une chaire de médecine au quinzième siècle; Paris, 1909.

‡‡Lamure, Hist. des ducs de Bourbon et des comtes de Forez, edit. Chantelouze, t. III, Preuves, p. 218.

Should we speak here of some of his incidental diseases, of the continuous fever of malarial origin which placed his life in so great a danger that it was thought he was the victim of poison?† Assuredly this fact is not too unimportant to note, if one admits that malarial intoxication directly provokes nervous disturbances (Régis) and even convulsions (Bouchard) in those who are predisposed. But there is another point in the king's life that requires clearing up; and since a recent discovery has acquainted us with its true history, the duty devolves on us to elucidate so that further light may be thrown on the subject.

* * *

Memoirs of the time mention " a dermatosis" with which Louis XI. was affected; and although the text of the chroniclers is void of ambiguity, they nevertheless show some hesitancy in naming it. There is no doubt that the disease was leprosy;* a diagnosis moreover confirmed by the diplomat whose knowledge of the king's diseases is trustworthy enough to bear frequent quotation. The king had at a certain epoch ordered pharmaceutical preparations, among others the meal of lupine seeds and "cheeses called angelot." Moreover he had had recourse to the specific saints of skin diseases—St. Marcou, St. Martin and St. Lazare. But what was the precise nature of his skin affection since nothing definite has come to us from any of the old records? Should the diagnosis be vitiligo or psoriasis or ulcers? Many conjectures were made by the king's chroniclers, but not until recent times has a book appeared that is capable of brushing aside all our uncertainties.**

The 8th of July, 1483—the pilgrimage, by the way, has been variously placed between 1472 and 1482—the king decreed the sum of one thousand ecrus for his fleet captain, George the Greek, and dispatched him in haste to "the Green Isle" and "the country of Barbary," to acquire "some things which would greatly benefit the health of the royal person." Two ships and a bark placed under the captain's orders set sail from Honfleur with three hundred soldiers, pages and cooks, the expense of the expedition being borne by "the peasants" of the Normandy towns. According to a French explorer who had returned from Guinea, St. Jacques, at that time the only inhabitated island of the archipelago, was not only immune from leprosy but many cures had been effected there.

The treatment was simple. The large tortoises which at low-water browse on the herbs near the shore, were quickly and dexterously turned

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†Dispatch from Jean-Pierre Panigarola to the Duke of Milan, dated Chartres, May 26, 1467 (Bibl. nat., fonds italien, 1649), cited by Brachet.

*In the unpublished Fragments of Th. Basin (Notices et Extraits des Manuscrits, XXIV, 2 partie, p. 20), published by M. Léopold Delisle, is this phrase which can be interpreted only in one way: "Morbo *lepre* a pluribus fertur infectus fuisse." If this is not leprosy, then the true meaning of the term is unknown to us.

**This has been pointed out to us by M. C. de La Roncière when discussing the matter from a different standpoint in his excellent book, Histoire de la Marine francaise, t. II.

on their backs by the islanders and then killed. "The infected and sick with scaly leprosy" were bathed in the blood; "and when the blood dries on the body," adds the explorer, "the sick find themselves so stiff for two or three days that they cannot bathe anymore, and it is necessary to feed them as one feeds an invalid or a child. Afterwards they are well and remain strong. The internal treatment consists of purging by eating fish and the fat of a leprous tortoise. If this treatment is continued they are cured of the ailment at the end of two years."*

Here we pause to ask, why all this pother to organize an expedition to search for so commonplace a remedy? Now the truth of the matter was that the Portuguese jealously guarded their gold mines, and to prevent the approach of strangers to their shores, they gave out the report, that on account of swift currents certain ships would founder. They also took the precautionary measures of sending their old barks to Guinea, to be dismantled and transfomed into caravels so as to be used as another means of defense. And they took good care on July 21, 1481, to renew with Sixtus IV. the privilege accorded them by Nicholas V. of being the only authorized navigators to frequent the coast of Africa and the adjacent islands, from Capes Nun and Bojador to Guinea. Thus can be explained the presence of so many soldiers on board the French vessels: soldiers no doubt more interested in the possibility of a war than the slaying of a tortoise!

But did Louis XI. have leprosy? The expedition to "the Green Isle" confirmed the rumors put in circulation by the chronicler, Thomas Basin.† The success of the expedition was the means of divulging the secret which had been guarded so well; hence there can be no doubt that the king had leprosy. Now the unfortunate thing about the trip to "the Green Isle" was that the king got no benefit whatsoever from his fleet captain's voyage; in fact, he did not even hear of the efficacy of the remedy, for before the expedition returned he had died.**

* * *

The three affections—epilepsy, hemorrhoids and leprosy, not to mention the intercurrent diseases and indispositions which interfered almost without remission in the matter of the king's health, should suffice to explain his invincible longing for solitude, his irascibility, his fierce misanthropy. But despite what disease may do to discourage and even hamper one's desires, his travels from one end of his kingdom to the other bear witness to the fact that, save in the last period of his life, Louis XI. evinced an astonishing activity that should arrest our attention. A hurried diagnosis would pronounce this unrest typical of am-

*Eustache de La Fosse, Voyage à la coté occidentale d'Afrique, en Portugal et en Espagne (1479-80), publié par Fouché-Delnosc. Paris, 1897, in-8, p. 18-29 (Extra. de la Revue hispanique).

†A nonnullis, prius quam obiret, leprosus fuisse assertus est. (Thomas Basin, édit. Quicherat, t. III, p. 166).

**De la Roncière, op. cit., p. 394.

bulatory insanity, with the same carelessness that is evidenced by certain authorities, when they make mention of zoophilia and even kleptomania, because one day it pleased the king's fancy to issue an order to seize "all the magpies, jays, ravens, and other tame birds."

One hastens to ask whence arose these subtle neuro-pathologic findings, for only a degenerate is capable of having such impulsions "which are the true stigmata of degeneration." Even though one admits the existence of these irresistible impulsions in the case of Louis XI., and asserts hereditary degeneracy in support of their presence, we should only say at most, that too often a habitually bad state of health is the penalty of superior beings. Is it problematic to state that with them the concentrated brain absorbs the largest share of nervous influx, to the great detriment of other organs? As that perspicacious observer, Fernel, said some centuries ago: "A capite fluit omne malum."

Although psychic disorders are to a great degree proof of the miseries of human nature, superior beings conserve at least this advantage over the vulgar, that albeit they may pay a partial tribute to a malady, as was the case with Louis XI. when it led to decay or wear and tear of the organs, they, as great leaders of mankind, are never enslaved by it.

(CONCLUSION OF THE CHAPTER ON LOUIS XI.)

MEDICAL AND SURGICAL PROGRESS.

THE PORTS OF ENTRY OF TUBERCULOSIS IN INFANCY AND EARLY CHILDHOOD.

A REVIEW OF RECENT LITERATURE.

By Alfred Friedlander, M. D.

1. Diagnosis of Tuberculsois in Young Children.—Shaw and Laird (*Archives of Pediatrics,* July, 1909).
2. Relation of Infectious Diseases to Tuberculosis.—Copeland (*Archives of Pediatrics,* July 1909).
3. Primary Intestinal Tuberculosis.—Gittings (*Archives of Pediatrics,* July, 1909).
4. Frequency of Abdominal Tuberculosis.—Bovaird (*Archives of Pediatrics,* June, 1909).
5. Tuberculization in Young Infants.—Ferrien (*Ann. de Med. et Chir. Inf.,* May, 1909).
6. Human and Bovine Tubercle Bacilli.—Sweeney (*N. Y. Med. Jour.,* June, 1909).
7. Pathogenesis of Tubercular Infection.—Roux and Josserand (*Arch. de Med. des Enf.,* 1909, p. 100).
8. Role of Contagion in Tubercular Infection.—Comby (*Arch. de Med. des Enf.,* 1909, p. 161).
9. Ports of Entry of Tuberculosis in the Nursling.—Escherich (*Wien. klin. Woch.,* 1909, No. 15).
10. Contact Infection in Childhood.—Osteran (*Zeitschr. f. Hyg.,* 1908, p. 375).
11. Congenital Tuberculosis.—Rietschel (*Jahrbuch f. Kinderheilk.,* July, 1909).
12. Ports of Entry of Tuberculosis in Infancy.—Hutinel (*Arch. de Med. des Enf.,* 1909, p. 481).
13. Transmission of Tuberculosis in Childhood Through Family Association.—Floyd and Bowditch (*Arch. of Ped.,* March, 1909).

The literature is filled with the discussion of the pathogenesis of tuberculosis in childhood and it seems of interest to review some of the rather divergent views on a topic of supreme interest. There can be no question, at this time, of any generally accepted view, for the greatest diversity of opinion still exists. In general terms, it may be said that the inhalation theory finds most adherents. Shaw and Laird, as the result of their investigations, for instance, find that prenatal, congenital or hereditary tuberculosis are so rare as to be practically negligible. Rietschel finds that congenital tuberculosis is possible when there is maternal placental tuberculosis present, but only then. Fœtal infection, once started, may,

however, take several months post-partum to end the picture. Not every placental tuberculosis will cause fœtal infection, but this method of infection is commoner than was formerly supposed. The latent tuberculosis of infancy is not a justifiable hypothesis. Congenital tuberculosis always ends fatally in the first six months of life. Von Behring's theory is held to be absolutely untenable.

Shaw and Laird believe that inhalation infection is by far most common. They refer to Holt's figures, who found involvement of the bronchial lymph nodes and lungs in 99 per cent. of his cases. Albrecht had practically the same percentage. Infection occurs through the nasopharynx, tonsils, respiratory tract, or even the alimentary tract. In the home of the tubercular adult, the danger to the child is enormous. Cases of tuberculosis admitted to the New York Babies Hospital showed a history of tuberculosis in the family in 50 per cent. Direct infection through the alimentary tract is probably not so very common. Albrecht, of Vienna, made careful search in 3,213 autopsies in young children, finding primary intestinal tuberculosis in but 1-16 of 1 per cent. of the cases. Albrecht denies the possibility, so strongly urged by V. Behring, Ravenel and others, of tubercle bacilli passing through the intestinal mucosa and the mesenteric lymph nodes and infecting the lungs and bronchial lymph nodes, without leaving any trace in the intestines. Comby, of Paris, with an enormous experience, says that he has never seen a case of primary intestinal tuberculosis. There is a tendency to overrate the danger from milk of tuberculous cattle. The danger of human contagion is very much greater. Gittings says that the decision as to the importance of the intestinal route is still not given. That the tubercle bacillus may reach the bronchial glands by way of the mesenteric nodes and the thoracic duct, has been experimentally proved in animals. But the weight of evidence, both laboratory and clinical, is against the probability of frequency of such intestinal infection. Indeed, the reverse seems probable, considering the number of cows infected with tuberculosis. Either the bovine type of bacillus is of low virulence for the human race, or we must accept the dictum of V. Behring concerning latent tuberculosis in infancy, or what is more probable, we must believe that the bacillus in growing through the gastro-intestinal mucosa meets with many conditions unfavorable for its existence and that the epithelial cells of the mucosa offer a vital resistance to its inclusion and thus to its transmission to the lymphatic circulation.

Discussing the human and bovine type of bacilli, Sweeney finds that the varieties differ in many characteristics. The human subject may, however, become the host for either form, but this is also true of the cow. Tubercular infection (in the human being) of the respiratory tract is usually due to bacilli of the human type, while lesions of the bones and joints and lymphatics are more likely to be due to the bovine bacillus. Terrien agrees that hereditary transmission is negligible. Tracheobronchial adenopathy, whether brought from the respiratory tract or not, is, however, not a positive sign of the "pulmonary entrance" of the disease. The ways of entrance include the nasopharynx and the intestinal mucosa, though primary intestinal tuberculosis is much rarer than has been supposed. The principal factor is human contagion. Comby emphasizes this same fact, that all infection occurs through direct human contact. Prophylaxis would thus consist in removing the child from its tubercular surroundings. Escherich also adheres to the doctrine of direct contact, finding that in all cases the history shows that the child has had to do with a tubercular person. Aerogenous infection is primary,

almost always. The primary *lesion* is always in the lungs or bronchial glands, with secondary infection through the blood stream. On the other hand, while believing that aerogenous infection is the commonest form, Osterman holds that direct contact is probably not of such great etiologic importance. He feels that the danger of contagion has been greatly exaggerated of late, and supports his views with the recital of a series of most ingenious original experiments.

Hutinel believes that intestinal infection is comparatively rare, that it can not possibly account for 1-10 of all the cases. He, however, holds that infection through the lymphatic way of the nasopharynx is still rarer. Direct aerogenous infection is the constant type and in nearly every case it is possible to discover the primary "inoculation chancre" in the lung, from which the caseation of the bronchial glands has proceeded. In a discussion, based, it must be said, largely on theoretic considerations, Roux and Josserand assert that the most frequent mode of infection is neither by inhalation nor through the intestinal route. They believe that the most frequent port of entry is the lymphatic ring of the nasopharynx, and that the second port of choice is the "lower tonsil," *i. e.*, the appendix. Substantiation of their theory is, however, not convincingly adduced.

An interesting statistical study of intestinal tuberculosis is published by Bovaird. His figures (taken from massed hospital records) show that abdominal tuberculosis must be at least eight times as common in Great Britain as in America, France or Germany. His tables are really of importance as explaining the diversity of view as to the original ports of entry. Whatever views be held as to the interpretation of localization of lesions with relation to the pathology of infection, there is general agreement that if infection takes place from milk, we should find a preponderance of tuberculous lesions of the intestines, mesenteric lymph nodes and possibly the peritoneum. This fact has been proven, for all recent investigations of the *type* of bacilli found in human lesions show that the bovine type is frequently found (in 70 per cent.) in lesions of abdominal tuberculosis in children and rarely in other cases. Where abdominal tuberculosis is frequent, there bovine infection is common, but not under other conditions.

Floyd and Bowditch, from a clinical study of 1,000 cases, find that the modes of infection are necessarily various and frequently multiple. The two great paths of infection are by inhalation and ingestion. Whatever the mode of infection, direct transmission (by contact) from parent to child is probably the most important factor. Of these 1,000 cases, 679 had been in immediate contact with tuberculosis in the home. Of this number 36 per cent. showed definite signs of pulmonary consolidation. Evidence of tuberculosis was often found in several children of the same parents. The respiratory tract is not the only vulnerable point. Fifty per cent. of these children had hypertrophied tonsils; 14.5 per cent., in addition, had adenoids without enlarged tonsils. Invasion of the serous cavities (peritoneum and meninges) was found only in two or three cases.

Copeland discusses the relation of the acute infections to tuberculosis; measles, pertussis and influenza are all characterized by catarrhal inflammation of the mucous membranes and by greatly lowered resistance to secondary invaders. In this catarrhal condition of the mucous membranes lies the key to their relation to tuberculosis, in that it promotes the activation of quiescent disease. Infection is thus by inhalation, but in

children the theory of infection must be of great importance. Mesenteric lymph nodes have been shown to contain tubercle bacilli even in the absence of demonstrable lesions. The thoracic lymph nodes are often the primary focus of infection, irrespective of the port of entry. Another factor of importance in the relation of the acute disease to tuberculosis is the lymphatic activity which so commonly accompanies the pulmonary inflammation in these conditions.

RECENT COMMUNICATIONS UPON ORGANO-THERAPY.

REVIEW OF LITERATURE.

By William Engelbach, M. D.

1. The Influence of the Reduction of Kidney Substance Upon Nitrogenous Metabolism.—R. M. Pearce (*Jour. Exp. Med.*, 1908, x. 632).
2. Hypophysis Glycosuria and its Relation to the Diabetes of Acromegaly.—Borchardt (*Zeitschr. f. klin. Med.*, 1908, lxvi. 332).
3. The Thymus in Basedow's Disease.—Capelle (*Münch. med. Woch.*, 1908, lv. 1826).
4. Salt Metabolism in Experimental Nephritis.—Schirokauer (*Zeitschr. f. klin. Med.*, 1908, lxvi., 182).
5. Specific Stimulation of the Intestinal Peristalsis by Intravenous Injection of "Peristaltic Hormone."—Zuelzer, Dohrn and Marxer (*Berl. klin. Woch.*, 1908, xlv., 2065).
6. The Inhibition of Pancreatic Activity by Extracts of the Suprarenal and Pituitary Bodies.—Ralph Pemberton and J. E. Sweet (*Arch. Int. Med.*, 1908, i., 628).
7. The Serum Treatment of Chronic Nephritis.—Casper and Engel (*Berl. med. Woch.*, 1908, xli., 1836).

R. M. Pearce notes the importance of the influence of a possible internal secretion of the kidney, if such exist, upon general nitrogenous metabolism. Up to the present time there is little experimental or other evidence to support such a theory of an internal secretion. Pearce's experiments have been along these lines, that is, in removing amounts of kidney substance sufficient, presumably, to disturb the hypothetical internal secretion. His conclusions are that the removal up to three-fourths of the kidney substances causes no change in the general nitrogenous metabolism, as determined by the estimation of total nitrogen, urea, and ammonia elimination in the urine. The removal of large amounts leads to the metabolic condition of starvation; this, however, is apparently the result of the gastro-intestinal disturbance associated with extensive kidney reduction, and not to a disturbance of general nitrogenous metabolism. The determination of the amount of fecal nitrogen indicates that the gastro-intestinal disturbance is not due to diminished absorption and, except in one instance, there was no evidence of its being due to an increased elimination of nitrogenous substances into the intestine. These experiments then do not support the theory that the kidney furnishes an internal secretion, having an important influence on general nitrogenous metabolism. At least, if such a function exists, it is not disturbed by the removal of three-fourths of the kidney substance. The metabolism in excessive kidney reduction is that of inanition dependent on gastro-intestinal disturbances, presumably due to faulty chemical correlation. In this connection further knowledge concerning the elimination into the intestines of toxic substances is desirable.

It is not quite generally accepted that in acromegaly there is hyperfunction of the hypophysis, which may be of etiological importance. Since many cases of acromegaly are complicated with diabetes, Borchardt considers it possible that the latter may be due to the same cause. To test his hypothesis he has injected extracts of the hypophysis subcutaneously in rabbits. The extract was obtained from the hypophysis of man and the horse. In each animal used, following the injection of a rather large dose of extract, glycosuria occurred. The amount of sugar varied from a trace of 4.2 per cent., the glycosuria being transient and seemingly independent of the size of the dose of extract. In two animals hyperglycemia was demonstrated, the blood showing 0.41 per cent. sugar in one instance. In dogs the results were inconstant. Brain extract produced no glycosuria when injected subcutaneously. In reviewing 176 cases of acromegaly in the literature, Borchardt finds diabetes in 35.5 per cent. of the cases. The pancreas was normal histologically in most of the cases examined. Borchardt thinks his experiments make it probable, although by no means certain, that the diabetes of acromegaly is to be explained by hypersecretion of the hypophysis cerebri.

Capelle has interested himself in the question of sudden death as a result of operation in cases of Basedow's disease. Some have ascribed death to the narcosis, others to a certain flooding of the blood with the products of the thyroid gland. But the use of cocaine anesthesia has been followed by death, and, indeed, the simple tying of the arteries has resulted fatally. A study of the literature shows that enlargement of the thymus is found in fatal cases with great frequency. Capelle finds that of 60 cases (autopsy) 79 per cent. showed a hypertrophic thymus. The operative and postoperative fatal cases had in every instance an enlarged thymus. The investigation suggests: (1) That the thymus is not necessarily enlarged in Basedow's disease. (2) That its enlargement is clinically a good indicator of the severity of the case. (3) That the deaths from heart failure after operations are, in reality, thymus deaths. Cases which show a persistant enlarged thymus should not be subjected to operation.

Schirokauer has produced nephritis in rabbits by administering uranium nitrate and potassium chromate. Severe kidney lesions were obtained, often accompanied by anasarca. Quantitative analysis of the phosphates, chlorides, and sulphates give the following results: In nephritis with generalized œdema, one finds an increased water content of the organs (muscle, liver) as a manifestation of the general total salts of the organs which is ascribed essentially to the retention of chlorides. The phosphates are not increased in the muscles, but in the liver the quantity is variable, being above normal occasionally. The sulphates of the muscles are within the normal limits. In the blood, however, the findings are different, the total ash showing a definite, though slight, diminution. The phosphates of the blood remain normal, while the sulphates in animals poisoned with uranium are abnormally high.

Zuelzer, Dohrn, and Marxer were led to the study of intestinal peristalsis by the work of Starling on the mammary gland and that of Bayliss and Starling on secretion. They suspected that a hormone existed in the stomach which acted as a specific stimulus to intestinal peristalsis, and they succeeded in demonstrating such a body in the gastric mucosa, to which they gave the name "peristaltic hormone." To obtain it the animal must be taken at the height of digestion. It is not obtained from the fasting stomach. This harmone, like others, acts through the blood. If one injects it intravenously in the rabbit, an energetic contraction extend-

ing from the duodenum to the rectum begins in a few seconds. To prepare the harmone, they extracted the gastric mucosa with salt solution or dilute hydrochloric acid and precipitated the albumin with alcohol. The stomachs of various animals, the rabbit, pig, horse and cattle, contained the hormone. In cattle it is only found in the glandular part of the stomach. A similar harmone, weaker and not constantly present, may be obtained from the duodenal mucosa. In a subsequent communication the authors will consider the therapeutic uses of this body.

Ralph Pemberton and J. E. Sweet have found that the suprarenal glands and the nervous portion of the pituitary body in dogs contain something which, on extraction with salt solution and intravenous injection into dogs, cuts short the flow of pancreatic juice after the administration of secretin. It also prevents the stimulation of the gland by secretin, if such an injection has preceded. This feature has been found up to the present time in no other tissues. It is independent of the general rise in blood pressure seen after the intravenous injection of adrenalin and pituitary extracts. The inhibitory factor of extracts of the suprarenal gland seems to disappear by decomposition, oxidation, or other processes before the blood pressure raising element has gone. It would appear that the suprarenal and pituitary bodies have at least one property other than those generally recognized as present.

Casper and Engel give an account of eleven cases of chronic nephritis treated with serum which they obtained in the following manner: 50 to 60 c.c. of blood was withdrawn by venesection from a given case of nephritis. This blood furnished 25 to 30 c.c. of serum which, after warming to 58° C., was injected in healthy dogs. The dogs were injected once or twice a week in gradually increasing doses until eight or ten injections had been given. The dogs were then bled and the serum obtained. This serum was injected in small doses in cases of nephritis until, after repeated injections, no constitutional reaction occurred. Then normal human serum and even at times normal animal serum was injected for the purpose of supplying the complement. Their findings were as follows: (1) The treatment is harmless. (2) In some cases the amount of albumin and the number of casts in the urine remained the same; in others, they diminished and even entirely disappeared. (3) In all the cases, the general condition was benefited. (4) The œdema disappeared. They believe that the serum has no effect on the kidney tissue already diseased, but that it may prevent the extension of the process. They explain in this way the apparent absence of effect upon the amount of the albumin and number of the casts in some of the cases in which the other symptoms improved.

MADELUNG'S DISEASE.

A REVIEW OF RECENT LITERATURE.

By Nathaniel Allison, M. D.

1. A New Case of Madelung's Disease.—Marsan (*Arch. gen. d. chir.*, 1908, ii., 492).
2. Congenital Dislocation of the Wrists.—Robinson and Jacoulet (*Arch. gen. d. chir.*, 1909, i., 1-110).
3. Madelung's Deformity.—MacLennan (*British Med. Journ.*, September 18, 1909).
4. Madelung's Disease.—Poncet & Leriche (*Gaz. d. Hop.*, February 9, 1909).

The peculiar deformity of the wrist which has come to be known as Madelung's disease or deformity was described by Madelung in 1878 as a "spontaneous subluxation," in which the lower extremity of the ulna is displaced toward the back of the hand, the lower end of the radius is bent forward and the two bones of the forearm are abnormally separated. This leads to a noticeable deformity and to a certain weakness and disability of the wrists. Following his description Duplay, in 1891, called attention to the fact that in certain cases of rickets there was an incurvation of the radius, and in 1897 Deblet attempted to show that rickets might be the cause of the deformity. Gasne (*Revue d. Orthopedie*, 1906), has written a complete review of the subject which will be found of value.

Marsan (1) says that Madelung has been found in error, that in these cases there is no luxation, but a diaphyseal or epiphyseal incurvation of the radius. The disease is therefore a curved radius with the radiocarpal connection normal. In his paper there is a report of a case in which the radial curve existed on both sides, but was more marked on the left. This deformity was of a year's duration, and during the same period tuberculosis had developed in the tibiotarsal joint. The patient has tuberculous arthritis, and a skiagram shows that the lesion in his wrist developed at the upper diaphyso-epiphyseal junction.

Robinson and Jacoulet (2) present an illustrated historical study of the subject and shows that there is a certain analogy between congenital dislocation of the wrist and congenital dislocation of the hip joint. In both cases the cavity for the reception of the head of the bone is too shallow. In the case of hip joint the deformity is not noticed until the child begins to walk. At this time the traction from walking aggravates the deformity. This is also true at the wrist, the joint being defective predisposes to a posterior dislocation. Trauma, however slight, or occupations of certain types, may cause the subluxation to take place. They compare the curve to the curve seen in genuvalgum. Surgery does not promise much for the condition; the best that can be done is an orthopedic appliance to prevent further subluxation.

According to MacLennan (3) Madelung's subluxation is not a true

subluxation, but is a distortion of the wrist, depending upon irregularity in growth at the lower radial epiphysis. This bone may be either curved outward and backward or forward and inward, giving rise to either forward or backward displacements. The condition is seen most frequently in females (85 per cent.) and it affects both wrists in about 70 per cent. of the cases. He mentions among etiological factors trauma, rickets and central nervous diseases, and mentions that the condition may be produced in intrauterine life. Secondary changes occur about the wrist. As treatment he recommends cuneiform osteotomy at the time when the deformity is completely developed, suggesting a destruction of the ulnar metaphysis. In slighter cases simple osteotomy will accomplish a correction.

Poncet and Leriche (4) have gone over the subject again and are of the opinion that the condition may result from various etiological factors, such as rickets, tuberculous arthritis and congenital conditions. They report three cases where tuberculosis of the skeleton elsewhere was found as an accompaniment of the wrist deformity.

DIAGNOSTIC AND THERAPEUTIC NOTES.

PRIMARY TUBERCULOUS SPLENOMEGALY.—Ciaccio (*Deutsch. Zeitschr. f. Chir.*, Vol. 98, Nos. 4 and 5). It is an extremely common error to mistake an obscure tuberculosis for malaria. Ordinarily, however, this error will not occur where there is an intermittent fever with large spleen. Ciaccio reports a case showing that even here the pathologic condition may be due to tuberculosis. The patient was a woman, aged 45 years, with what clinically appeared to be malaria and a huge spleen that was thought to be ague-cake. An exploratory laparotomy was done, but a splenectomy was impossible on account of the firm adhesions. A piece of the spleen, as well as some omental tissue, were excised and on microscopic examination were found to be tuberculous. This observation deserves especial attention in our country where large malarial spleens are so common.

FIBROLYSIN.—Rothschild (*Muench. med. Wochenschr.*, 1909, No. 33). Clifford (*Lancet*, August 14, 1909). Moerlin (*Muench. med. Wochenschr.*, 1909, No. 27). Rothschild considers fibrolysin a sovereign remedy for adherent pleura and in general for contracting scars. A daily injection of 2 c.c., combined with proper exercise, is almost always successful and usually renders surgical interference unnecessary. Clifford, on the other hand, points out the dangers sometimes involved in the use of this drug. In one case the administration of fibrolysin was followed by hemorrhage into the skin and mucous membranes, producing the picture of a true purpura hemorrhagica. Moerlin reports a case of interstitial hepatitis in which the suffering was greatly relieved by subcutaneous injections of fibrolysin.

CHRONIC HYPERTROPHIC RHINITIS.—R. Meyer (*Therap. Monatsh.*, 1909, No. 6). In obstinate cases of chronic hypertrophic rhinitis, Meyer found the following treatment often successful. The nose is washed out every morning with warm physiologic salt solution, to which one per cent. glycerine had been added. Every evening the nasal mucosa was massaged with ten per cent. protargol lanolin or with the following ointment:

Protargol	1.5
Solv. in Aq. dest	2.5
Lanolin	6.0
Menthol	0.1
Saccharin	0.3
Vaselin, flav. ad	15.0

Warts.—Sicard and Larne (*Presse méd.*, 1909, No. 1). If a few drops of tinct. thujae are injected, by means of a fine needle, into a wart, the latter soon takes on a dark brown color, shrinks and is thrown off. Such an injection should be given after the tumor has been soaked for some time in warm water and has been made as sterile as possible. Papillomata of moderate size are said to yield to a single injection; in very large ones the treatment must be repeated several times at intervals of 5-6 days.

Cholelithiasis and Diabetes Mellitus.—Hedinger (*Ther. Monatsh.*, July, 1909). Hedinger reports a case of cholelithiasis in the course of which a diabetes mellitus made its appearance. It was of moderate severity and persisted even in the intervals between the attacks. Finally an empyema of the gall-bladder set in. The pus was evacuated by means of a laparotomy, resulting not only in a cure of the gall-bladder trouble, but also in a permanent disappearance of the diabetes. The latter was, therefore, purely symptomatic and the writer justly concludes that a complicating diabetes forms no contra-indication to operation in such cases.

Etiology and Therapeutics of Pernicious Anemia.—Reicher (*Berlin klin. Wochenschr.*, 1909, Nos. 41, 42). Reicher strongly recommends that cholesterin in solution be administered in all cases of pernicious anemia. As the result of extensive animal experiment he has found that cholesterin neutralizes the hemolysins circulating in the blood. As pernicious anemia is probably always due to the destruction of the blood cells by hemolysins absorbed from the digestive tract, a substance capable of destroying them in the circulation should have a curative effect in these cases. The clinical evidence of the value of cholesterin ni pernicious anemia is as yet scanty, but in view of its innocuousness and considering the hopeless nature of many of these cases, the treatment is well worth a trial.

CORRESPONDENCE.

PARIS LETTER.

By Auguste A. Housquains, M. D.

THE BEARERS OF BACILLI.

In spite of the progress accomplished in the prophylaxis of infectious diseases; in spite of the money spent by municipalities to effect disinfection of localities in which have sojourned the sick affected with contagious diseases; the number of cases reported daily remain relatively the same. Therefore the pertinent questions to ask resolve themselves into these: Are the measures in use to-day efficacious? and—to follow the contention advanced by some—is it absolutely necessary to disinfect localities in the hope of ameliorating conditions? The most recent works on this subject, without infirming the value of disinfection, advance the idea that disinfection as carried on to-day does not suffice, because the pathogenic microbes are not only distributed on the surface of walls, in the thickness of carpets and hangings, and in the crevices of the floor, but have their best vehicle for distribution in the sick themselves. In cerebrospinal meningitis, in cholera, and especially in typhoid fever, it has been demonstrated that even after recovery the sick harbor within themselves—in their digestive tract, in their excreta, in their divers mucous discharges—microörganisms in a virulent state for a more or less prolonged period. Again—and here the question of disinfection becomes particularly delicate and complicated—we know at the present time only too well, that those who have come in contact with patients affected with contagious diseases are themselves an excellent medium for spreading disease, since they take it for granted that having escaped infection, there is no possibility of their carrying any active germs. Hence, it is not difficult to conceive that it does not suffice to quarantine the infected and afterwards disinfect their homes. What is really necessary is to stop the healthy from carrying and disseminating the germs with which they are impregnated on account of having come in contact with infected individuals. Is it possible to isolate these carriers of bacilli, and impose on them a sort of quarantine, since they present no symptoms of disease, and only a microscopic examination of the mucous discharges and the excreta is capable of deciding the presence of virulent microörganisms? Such a procedure is not within the bounds of reason; therefore, it is well for us to admit that, theoretically and practically, the absolute prophylaxis of contagious diseases is impossible.

Ought we, therefore, to conclude that disinfection is useless? M. Comby, physician to the Paris Children's Hospital, has not hesitated to start a campaign against disinfection, as we understand it to-day. In his published statistics, he has asserted that disinfection is not by any means an obstacle to the propagation of measles, since it is the sick them-

selves and their entourage who are really responsible for the active dissemination of this disease. Applying the same line of thought to scarlatina, M. Comby shows that what is true in the case of measles is no less true in scarlatina. It has been accepted without reservation, that the pathogenic agent of scarlatina is found in the superficial layers of the skin. When desquamation obtains, the strips of epidermis detach themselves, thereby liberating the microbes imprisoned in the strips, and disseminating and depositing them in the surrounding atmosphere and on nearby objects. Hence, the disinfection of the room in which the infected patient sojourned has the object of preventing in a certain degree the propagation of the disease, but certain facts currently observed show that the contagiousness of desquamation in scarlatina is less active and less fatal than is supposed. Many are the cases where young persons are so immune as regards all scarlatinal infection, that they have run no risks in playing with children convalescing from scarlatina, even though desquamation was at its height. Apropos of this, Dr. Breesé has reported the following case: A boy nine years old contracted scarlatina. As soon as the diagnosis was made he was isolated in his room, which was entered only by his mother when she returned a blouse which she hung up at the door. Each time she left the room, she washed her hands. The boy during convalescence amused himself by detaching the squamæ, the scales which formed in the palms of his hands. One morning, during the absence of his parents, he called his two sisters and at the half open door handed them what he thought was a most interesting object—a piece of skin he had just removed from his hands. Delighted with the gift the two young girls carried it into their room, where it remained for two days until discovered by their mother. But the sisters did not contract scarlatina, though they had played with their brother's "skin" throughout one whole morning.

Are then the squamæ of scarlatina not the true vehicle for pathogenic bacilli? Facts and experiences incline us to think that the epidermic scales are really not the seat of the pathogenic microbes, but that their habitat is in the bucco-pharyngeal cavity; and that it is the acts of coughing and expectorating through which the infected spread around them the germs of scarlatina. If this be true, would it not be advisable to destroy the germs by disinfecting localities either by the use of formol or corrosive sublimate? M. Comby marshalls against this question the following arguments: In the first place the disinfection, such as it is practical to make, is but slightly efficacious, and its direct action on the microbe is problematic, its most evident action being to ruin the furniture and hangings. Moreover, as regards the eruptive fevers, the pathogenic microbes are but slightly resistant and live only for a relatively short time after quitting the body; on the other hand, remaining in a virulent state for a long time when they are present in the mucous discharges. Finally, the practice of disinfection presents this danger, that while a certain security against the spread of an infectious disease is effected the real sources of propagation and contamination are neglected. Therefore it is a dangerous error to believe too exclusively in the efficacy of disinfecting localities. In New York, for example, where disinfection immediately follows the announcement of contagious diseases and where disinfection was scrupulously observed, the death rate showed no greater decrease in scarlatina than in other eruptive maladies. The same obtains in London, where the thoroughness of disinfection is always assured, and where statistics are regularly made. A case published by Richardson is weighty enough to make us doubt the efficacy of disinfec-

tion. A family composed of a father, mother and four children, lived in a cottage in the country. One of the children contracted scarlatina and died. The other children were immediately sent to a neighboring village some miles away. Some weeks after, one of the children returned to the cottage. At the end of twenty-four hours, it contracted the disease and succumbed. The cottage was entirely cleaned, the pictures were replaced, the floors scrubbed, the linen and clothes disinfected or destroyed. In about four months, the third child was sent back to the cottage, contracted scarlatina and died. According to M. Comby, whose opinions are, in fact, most trustworthy, the children in this case were infected by their parents or by the servants, who very probably were the carriers of bacilli and the disseminators of pathogenic germs, despite the fact that they remained immune from the disease. It is evident that if the disinfection of the cottage had not been made, we would be prone to see in this neglect the real cause of the successive deaths.

Is it necessary then to suppress the practice of disinfecting localities? No doubt in the eyes of a great many physicians such a procedure would be thought a very regrettable step, even though so sane an authority as M. Comby asserts that the microbes of scarlatina, as well as those of other infectious maladies, are not to be found on the walls, or the floors or the ceilings, not in the cellar or the garret. Nevertheless it is of importance to realize that the disinfection of the sick-room is an inefficient measure.

Since it is known that the microbes are harbored in the secretions of the infected person and of those who come in contact with him, it is necessary to disinfect the objects soiled by the secretions; and the better to effect this, disinfection should most carefully be applied to the nasopharyngeal, buccal and auricular cavities, by ordering rigorous and prolonged isolation during which the principles of asepsis ought to be applied to the clothes, hands and face. Such are the conclusions which M. Comby arrives at from his observations and experiences in the treatment of eruptive fevers.

October 10.

OBITER DICTA FROM FOREIGN JOURNALS.

THE POE CENTENARY.

The celebration of the hundredth anniversary of Poe's birth has been marked by the appearance of a number of notable books, such as "The Life of Edgar Allan Poe, Personal and Literary," by George E. Woodberry, "The Poe Cult, and Other Papers," by Eugene L. Didier, "The Last Letters of Edgar Allan Poe to Sarah Helen Whitman," edited by James A. Harrison, under the Auspices of the University of Virginia; but though these are illuminating enough from a literary standpoint, they are not so satisfactory to the medical mind as is the chapter on Poe in the recently published French book, "Poésie et Folie," by Drs. Antheaume and Dromard. For out of this chapter there issues the figure of the poet limned by men versed in psychiatry, and though the psychiatric point of view is never lost sight of in their attitude to their subject, the refreshing thing to register on their behalf is that throughout the chapter they do not fail to recognize the fact that Edgar Allan Poe's genius was not to be dismissed in the cursory manner of Moreau de Tours, who said: "Genius, that is to say, the highest expression, the ne plus ultra of intellectual activity, is a neurosis! Why not? We may easily accept this definition." The following excerpt is a free translation of a reproduction of the chapter on Poe, recently printed in *La Revue Médico-Sociale:*

Alcoholic ancestors, a father and mother phthisical and inured to a life of misery, a brother badly balanced, a sister almost idiotic,—such is the family balance-sheet of Edgar Allan Poe. Orphaned early in life, he was adopted by John Allan, a wealthy merchant. His singular precocity developed early as did his disequilibrations of character. Upon leaving his school at Richmond, and whilst preparing for the University of Virginia, he already showed various eccentricities, and his crises of dipsomania were bad enough to attract the attention of those in his immediate surroundings. A comrade, commenting on his failings, said: "His passion for strong drink was as marked and strange as for cards. It was not the taste of any one drink that attracted him. Without either moistening his lips or wetting his tongue preparatory to enjoying his drink, he would swallow the contents of a glass in one gulp." At the rather immature age of seventeen, then, we already are made aware that the picture presents all the characteristics of the dipsomaniac. In fact, his habit was to drink "en barbare" to use Baudelaire's expression, and throughout his whole career he never deviated from this deplorable habit. After unsuccessful attempts in literature, Poe expressed a desire to be sent to the Military Academy at West Point. But his incorrigible character was too insubordinate to submit to constraint and regulations; therefore, at the end of some months, his name was erased from the list of cadets. His adoptive father having refused to honor his debts, they parted company and he sought anew recognition as a writer.

In Baltimore, whither he went to make his home with his aunt, Mrs. Clemm, and her daughter, Virginia, his endeavors to find work, either

as an editor or teacher, were so unsuccessful that one cannot but feel that misfortune had singled him out for some very unkind blows. Following his ill luck, he abandoned himself, by turns, to frenetic literary work or to the gratification of the great temptation from without, which was forever clamoring for assuagement. All the witnesses of what Poe did at this time agree that his accesses of drunkenness were not frequent, that he was not the victim of habitual intemperance. This distinction should not be overlooked. In fact it is probable that at the critical age of twenty, while under the debilitating influences of physical privations and moral vexations, the dipsomania, until then latent, declared itself in no mistakable fashion by sudden and excessive accesses characterized by an intensity that not only alarmed the victim but also his friends.

But strange to relate, in the midst of this depression, success came unexpectedly. *The Saturday Visitor,* a Baltimore publication, offered one hundred dollars for the best story and Poe won the prize. This success induced him to accept the rather onerous position of editor and manager of the *Southern Literary Messenger,* a journal founded by one White who, while an excellent business man, was in sore need of a literary assistant to steer his paper clear of the shoals upon which so many publications are wrecked. Before long it became known that "the outlawed eccentric," "the incorrigible drunkard", was the luminary to whom the brilliancy of the publication was due. At last some meed of kind fortune was to be Poe's part, for his salary of twenty dollars a week really meant great prosperity. But one day White, in spite of the services rendered him, thought it his duty to dismiss him, little thinking that by this act he would be instrumental in bringing about a state of affairs greatly to be deplored. From now on Poe's extreme sensitiveness to alcohol revealed the striking fact that a debility of the nervous system was present. According to eye-witnesses, he was mentally transformed and even delirious under the least inebriate excitation. "I was walking one day with Poe," says the Rev. Warren Cudsworth, "when feeling thirsty I pressed him to take a glass of wine with me. He refused, but by way of compromise finally accepted a glass of beer. Almost directly a great change took place in him. Instead of continuing his eloquent conversation, he became as one paralyzed: the lips tight-closed, the eyes fixed and haggard. In this condition he walked on without uttering a word. After reaching the house where we intended to pay a visit, he remained for some time a prey to this mysterious influence. One would have thought him a being completely transformed by some bizarre attack of alienation." Willis, who was Poe's collaborator at one time, confirmed this opinion when he said: "Poe's lamentable condition, due to his irregularities, is so thoroughly characteristic that it may be summed up in these words: one glass of wine changes his nature completely; a demon gets the upper hand, and although none of the usual symptoms of drunkenness is apparent, his volition is undoubtedly alienated. In this sort of intoxication which denaturalizes his ideas of justice and of truth, he says and does many things contradictory to the best in his nature."

Of all the immediate consequences of intemperance, the most important to note in Poe was undoubtedly the sentiment of fear. This, moreover, need not astonish us, for one of the most ordinary results of poisoning by alcohol is this panaphobic state which holds the whole being in suspense and makes it a prey to perpetual anxiety. Fear, or in its attenuated form, exaggerated apprehension of people and things, is the most characteristic symptom of this sort of poisoning as it affects the mind. One may go

further and assert that this abnormal moral condition is in reality the cause of all the morbid manifestations, delirious as well as hallucinatory. Every night, with few exceptions, the impression of terror which invaded the poet's mind was so invincible that Mrs. Clemm had to remain at his bedside to reassure him, by kindly talk during many weary hours, that his fear of the shadows which he believed to be peopled with bad spirits was wholly groundless. After his wife's death, the irregularities of his life caused considerable mental confusion and his physical health went to pieces. John Sartain has related an episode in regard to this epoch of his life, which describes in no dubious terms his delirium, and must make sure to every medical mind the real character of its origin. "On a Monday afternoon," says Sartain, "he appeared before me with his face pale and haggard. 'Sartain,' said he, 'I come to you to ask you for refuge and protection. It will be hard for you to understand how such a thing that has happened to me can occur in the nineteenth century.' He told me that during his trip to New York he had overheard a conversation carried on by some people seated some distance from him, from which he gathered that they were plotting to kill him and throw him from the car. After a long silence he turned to me and said: 'If I have my moustaches removed it will not be so easy to recognize me. Shall I take a razor and shave them off?' I replied that not being in the habit of shaving myself I had no razor, but that if he wished it I would cut them off with a pair of scissors, which operation was soon effected. Before leaving he spoke of visions which had assailed him: of a radiantly beautiful young woman who had addressed him from the top of a battlemented tower. After this sort of occurrence he recovered consciousness slowly, and only after a time did he recognize the fact that his nightmare was an illusion."

There is no doubt that here we are in the presence of a crisis in hallucinatory delirium. It is not the only crisis reported in Poe's case, but it is so well outlined, so clearly marked, that it must warn us, on account of its gravity, of the dénouement which cannot be far off.

BOOK REVIEWS.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Vol. XI., No. 2, June, 1909, Octavo, 317 pages, with 52 illustrations. Per annum, in four paper-bound volumes, containing 1,200 pages, $6.00, net; in cloth, $9.00, net. Lea & Febiger, Publishers, Philadelphia and New York.

The June issue of *Progressive Medicine* contains a synopsis of the literature on the following subjects: Hernia by William B. Coley; Surgery of the Abdomen by Edward Milton Foote; Gynecology by John G. Clark; Diseases of the Blood by Alfred Stengel, and Ophthalmology by Edward Jackson. This number in particular deals with some subjects of special interest, among them being Hirschsprung's disease, the surgery of the pancreas, diseases of the ductless glands and the ever important problem of uterine cancer.

FOURTH ANNUAL REPORT OF THE HENRY PHIPPS INSTITUTE. For the Study, Treatment and Prevention of Tuberculosis. February 1, 1906, to February 1, 1907. Edited by Joseph Walsh, A. M., M. D. Published by the Henry Phipps Institute, Philadelphia.

This report of some four hundred and thirty pages, contains essays by various members of the staff, dealing with interesting questions and problems on tuberculosis in all its phases. Each chapter is by a specialist, which gives added value to the reports. For instance, there is a report on laryngology, tuberculosis of the bones, neurology, pathology, bacteriology, etc. In the form of a report, the essays are presented in a most interesting style, and are illustrated where necessary.

CLINICAL DIAGNOSIS AND TREATMENT OF DISORDERS OF THE BLADDER, WITH TECHNIQUE OF CYSTOSCOPY. By Follen Cabot, M. D., Professor of Genito-Urinary Diseases, Post Graduate Medical School, New York, etc. Illustrated. New York: E. B. Treat & Co. 1909. Price, $2.00, prepaid.

This little volume is largely a record of the author's extensive personal experience with disorders of the urinary bladder. It is this fact which makes the book valuable, especially to the practitioner. All the various methods of diagnosis, including cystoscopy, and all the forms of treatment which have proved successful in personal experience, are described, but no attempt is made to cover the whole subject of urology.

TEXT-BOOK OF GYNECOLOGICAL DIAGNOSIS. By Dr. George Winter, Professor of Gynecology, Koenigsberg, Germany, with the Collaboration of Dr. Carl Ruge of Berlin. Edited by John G. Clark, M. D., Professor of Gynecology, University of Pennsylvania. After the Third German Edition. Philadelphia and London: J. B. Lippincott Company. 1909.

Winter's "Gynækologische Diagnostik" made its first appearance in 1896 and ever since has remained the favorite of the German student. Pressed by other literary work, Winter has been prevented from preparing this third edition at an earlier date. Ten years had elapsed since the appearance of the second edition and a thorough and extensive revision of the entire text matter had become imperative. In collaboration with Ruge, the expert in microscopic diagnosis, Winter has brought this standard text-book in harmony with most advanced knowledge. The English speaking profession is under obligation to Clark for the preparation of this excellent translation. He attempted to adopt the work to the special needs of the American practitioner by numerous annotations, which, however, are given in brackets, so that the translated German text remains intact.

INBORN ERRORS OF METABOLISM. The Croonian Lectures Delivered by The Royal College of Physicians of London, in June, 1908. By Archibald E. Garrod. London: Henry Frowde, Oxford University Press. 1909.

Under this title the author, whose work on metabolism needs no comment, has presented a series of lectures on Albinism, Alkaptonuria, Cystinuria, and Pentosuria. These essays contain what is definitely known concerning the subject in hand, and are presented in a concise, readable form. Both the author's literary style and profound knowledge make these essays valuable and interesting to those interested in metabolism.

EXPERIMENTAL PHARMACOLOGY. A Laboratory Guide for the Study of the Physiological Action of Drugs. By Charles Wilson Green, M. D., Professor of Physiology and Pharmacology, University of Missouri. Philadelphia: P. Blakiston's Son & Co. 1909.

A thorough working knowledge of pharmacology may be had only through laboratory experiments. The student must observe for himself the actions of drugs upon the tissues and organs of the animal organisms. The author in this small volume has presented a work for students which he has formulated as a result of the course presented by him in the University of Missouri. The more important drugs are presented with a series of experiments on each. The volume is liberally illustrated with tracings showing the effects of the various drugs upon the heart, lungs, etc.

DISEASES OF THE HEART. By Prof. T. H. von Jürgensen, of Tuebingen; Prof. L. von Schroetter, of Vienna; Prof. L. Krehl, of Greifswald. Edited with additions by George Dock, M. D. Authorized translation from the German under the editorial supervision of Alfred Stengel, M. D. Philadelphia and London: W. B. Saunders & Co. 1908.

This volume, which is one of the Nothnagel's series, is up to the usual standard of that magnificent work. Anything that may appear from the pen of these three masters is well worth careful perusal and study. Von Jürgensen has written the chapters on the Insufficiency of the Heart, Endocarditis and Valvular Disease. These chapters are very comprehensive and deal in detail with the subjects under discussion.

Krehl, who is known for his profound knowledge of human physiology, has dealt in a most masterful way with diseases of the Myocardium and Nervous Diseases of the Heart. This section is dealt with as only one can deal with it who has a knowledge not only of the clinical aspects of diseases of the heart, but of the underlying physiological principles and the pathological anatomy. Krehl's style is always interesting, and is no less so than usual in this production.

Diseases of the Pericardium have been described by Von Schroetter. This chapter, too, is well worth careful study. The volume as a whole is unquestionably one of the most complete that we have, dealing with diseases of the heart.

MEDICAL GYNECOLOGY. By Samuel Willis Bandler, M. D., Adjunct Professor of Diseases of Women, New Post-Graduate Medical School and Hospital, etc., etc. Second Revised Edition. Philadelphia and London: W. B. Saunders Company. 1909. Price, $5.00.

Only a short time ago we had opportunity to review in these pages this important addition to gynecological literature. The rapid exhaustion of the first edition must have been a source of gratification to the author, but also has offered him a welcome opportunity to make some few changes, especially in the chapters dealing with electricity and hydrotherapy. Several pages on head zones have been added as a further aid in diagnosis.

HUMAN PHYSIOLOGY. An Elementary Text-book of Anatomy, Physiology and Hygiene. By John W. Ritchie, Professor of Biology, College of William and Mary, Virginia. World Book Co., Yonkers-on-the-Hudson, New York. 1909.

The author of this really excellent little manual states in his preface that "the chief object of teaching physiology in the public schools is to train the pupils to keep their bodies in health. The mere teaching of anatomy and physiology will not accomplish this, for the pupil cannot master the structure and workings of the body in a way that will enable him to frame the laws of health and apply them. Neither can the desired end be reached by teaching rules

of health without an anatomical and physiological basis: for without such a basis, hygiene is an intangible and elusive subject. The author has concluded that a conservative middle course is wiser than either of the extremes mentioned above. An elementary text in physiology should be a *balance* text, containing sufficient anatomy to make clear the broader outlines of the structure of the human body, enough physiology to make plain the great laws according to which the body lives, and a full discussion of how a violation of these laws may be avoided.'

In the opinion of the reviewer the author has admirably accomplished the purposes set forth above. The book will undoubtedly meet with a ready acceptance from high and other secondary schools.

DISEASES OF THE HEART. By James Mackensie, M. D. London: Henry Frowde, Oxford University Press. 1908.

This volume presents the results of the author's observations on affections of the heart, made during an active practice of over a quarter of a century. It has been his special effort "to ascertain the mechanism by which cardiac symptoms are produced, to find out their relationship to organic changes in the heart, to ascertain their prognostic significance, and finally, to employ them as a guide for treatment." There have been utilized all of the newer and more exact methods of arriving at a diagnosis of heart diseases in general.

Chapters are devoted to the instrumental methods of examination, to the arterial pressure, the venous pulse, etc., etc. The classification has been made with special reference to symptoms, thus giving to the reader a broader knowledge of symptomatology, and the importance of careful observation. For instance, chapters are devoted to Diminished Frequency of the Heart's Action, to Irregular Action of the Heart, to the Extra Systole, etc., etc. The volume is beautifully illustrated, is of a convenient size and splendidly published. All in all it is a most satisfactory treatise on diseases of the heart.

ARTERIO SCLEROSIS. Etiology, Pathology, Diagnosis, Prognosis, Prophylaxis and Treatment. By Louis M. Warfield, A. B., M. D. With an Introduction by W. S. Thayer, M. D. St. Louis: C. V. Mosby Medical Book Co., 1908.

The author has endeavored to present in this small volume the essence of what is known concerning "a disease which is especially an outcome of modern civilization." In other words he has attempted to give to the general practitioner a readable, authorative essay on the subject.

The first chapters are devoted to Anatomy, Physiology and Pathology, and the succeeding ones to the Symptoms, Diagnosis, Prognosis and Treatment of the disease. From its pages one may get a fair conception of the ravages produced by arterio sclerosis, and its sequelæ.

NOTES ON THE DEVELOPMENT OF A CHILD. Vol. II. The Development of the Senses in the First Three Years of Childhood. By Milicent Washburn Shinn. Berkeley, California, University Press. Price, $2.50.

While primarily based upon observations made on a single child, these notes contain such extensive references to the observations of others, indeed, consider so thoroughly the entire literature of the subject, that the author in this volume uresents the most exhaustive treatise extant on the development of the senses of the child. This development is traced from stage to stage, with reference to the genetic relationship of these stages, and the process by which each unfolds from the preceding.

The importance of studies like these for the physician is obvious in view of the ever-increasing interest of the profession and the general public in the proper care of the underdeveloped or abnormal child.

TEXT-BOOK OF PRACTICAL GYNECOLOGY. By D. Tod Gilliam, M. D., Emeritus Professor of Gynecology, Starling-Ohio Medical College, etc. Third Revised Edition. Illustrated with 350 Engravings, a Colored Frontispiece and 13 Full-page Half-tone Plates. Philadelphia: F. A. Davis Co.

Following so closely on the second edition, there was little necessity of thorough changes in the preparation of this third edition. Nevertheless, many sections have been retouched, others having been almost entirely rewritten. The popularity of the work proves best its value.